COMPUTER WEEKLY

Number 566 Thursday, September 8, 1977 Price 18p

Recorded Antics of two dead kings

TWO kings recently died within a few days. Groucho Marx, king of the one liner gag and silly walk, and Elvis Presley, king of rock and the pelvis.

Both, however, will live on in their films and recordings, and also, through a mecabra quirk of fate, by courtesy of Antics, a graphics animation program that inseparably joined the two.

The Antics package (CW September 11, 1975) was the work of Alan Kitching, who developed the suite. With sponsorship from the Royal College of Art, the suite was eventually run on the ICL 1906A at the Atlas Laboratory in Didcot, and the Groucho-to-Elvis transformation was part of the outcome.

The suite is still in use, and has recently been installed by Swedish Television for use on the generation of programme titles.

In operation, it accepts digitised variable of freehand drawings, together with colouring and animation instructions. This allows the artist full control over the original drawing, while eliminating the task of repeated re-drawing for each frame of the film.

Positive results from CSA's talks

A REPORT* on the services industry, prepared by the Computing Services Association under the sponsorship of the government's Central Computer Agency and the Department of Industry, was made public last week.

But while the report itself is significant, the CSA is especially satisfied with the close contacts it has established with top ranking civil servants while preparing it.

And these contacts could lead to more research funds being channelled into industry by the Science Research Council and the Computers, Systems and Electronics Requirements Board for research projects, with practical results.

The SRC and CSERB are already discussing such moves (CW, April 28, May 5) — the discussions following criticism that too little of research funds go towards putting research to practical use (CW, July 29, 1976).

"We have had project discussions with the Central Computer Agency," said Ernest Morris, the CSA president. "They are aimed at finding opportunities for research and the development of new uses of computing in government departments. Our discussions could lead to joint advances by the government as user, and the industry as supplier. We are getting together rather than leaving the user to work out what he wants and then ask us if we can provide it."

Minicomputer systems in local government and network projects were the sort of things the service companies could be involved in.

Alan Benjamin, CSA director general, said the CSA now met the CCA every two months and had formal meetings with the Department of Industry every six months. "We have a mechanism for discussion with senior civil servants which is a different dimension from that in other countries. Even our US counterpart Adapso does not have such contacts with the US government."

Morris pointed out, however, that there was "strong evidence" that other countries gave more direct support than the UK to their services industries. This was particularly so in the US and Canada.

Morris added, "There's still an awful lot to do to get a government policy for the computer industry, hopefully with services at the front. But we have got it over that the computer industry isn't just ICL, but that the future lies in software."

The report gives a profile of the UK services industry, puts it into context with reference to the computer manufacturing industry, describes its relationship with government, looks at the industry in the US, Canada, Japan and a number of European countries.

*Report on the UK Computing Services Industry. 100pp. £75. Computing Services Association, 121 Kingsway, London WC2.

Siemens and Itel in printer agreement

THE high speed ND-2 laser printer built by Siemens is to be sold worldwide by Itel as a plug compatible alternative to the IBM 3800 printing subsystem. The agreement under which Siemens will supply Itel with the ND-2 on an OEM basis also calls for the joint development of IBM compatible non-impact laser printing subsystems.

The ND-2 was launched last year (CW, July 17, 1976), and is already offered to CDC, NCR and ICL users by Computer Peripherals Inc under an agreement with Siemens (CW, October 21, 1976).

European chief

COMPUTER output microfilm systems manufacturer, Datagraphix, has appointed a new managing director, Charles Springer, to supervise all its European operations. Formerly director of engineering of the San Diego, California, based firm, Springer is taking over from Bill Porter who is returning to the US to handle domestic marketing. Springer will work from the Datagraphix International offices at Maidenhead.

Free seminar

A FREE seminar on using a computer bureau is being organised for data processing managers by CMG Computer Management Group (Southern) on September 6. Further details from David Smith on 01-686 8251.

Building system

A PHILIPS P320 VRC has been installed by Thomas Findlay and Sons, an Ayrshire-based building contractor.

Honeywell boost for Level 6 software

TO compete more strongly with the minicomputer market leaders, Digital Equipment and Data General, Honeywell is to introduce a variety of new facilities for its Level 6 minicomputer this year, chiefly in the software area.

At the same time, systems houses are making more use of Level 6 as a base for their own applications software, Honeywell says.

Honeywell's own additions, scheduled for release later this year, include user microprogramming facilities. Similar enhancements have already been introduced by DEC and DG. Although the Level 6 does not have a microcoding capability, it has always been equipped to accommodate it, says Honeywell.

In the commercial software market, Data General has produced packaged systems based on the Eclipse processor, including such software features as Cobol and the Infos database. DEC also has a Cobol compiler, and PDP-11 versions of Cincom's Total and Cullinane's IDMS databases are available.

Honeywell's Level 6 is not yet so strong in the commercial field. Cobol and a commercial version of Basic are available, but the system has no database capability. This seems a likely area for Honeywell to expand, and an APL interpreter is also said to be under development for the Level 6.

Honeywell's systems software is expected to be released in the UK, but with applications software the situation is less certain, both because of different US and UK commercial requirements, and the fact that some of the software will come from outside companies.

On the hardware front Honeywell is expected to produce a large disc drive before the end of the year from Magnetic Peripherals, a joint venture with Control Data.

A timely move demonstrating the interest of systems houses in the Level 6 came last week with the signing of a contract for the purchase of 10 to 15 of the machines by Computer Factors of Coventry, to use as the basis of turnkey systems. Hitherto, CFL has worked mainly with General Automation machines, an arrangement which will continue.

Customs opts for Argus

AN order worth £500,000 has been placed with Ferranti by HM Customs for intelligent terminal equipment for its new wide online imports clearance and data capture network. As described in Computer Weekly 18 months ago (CW, March 4, 1976), the network will embrace major sea and airports.

Each of these will have terminal systems based on the Ferranti Argus 700E processor, linked online to files held on the System 4 mainframes at the Customs computer centre at Southend.

Other equipment orders from Ferranti includes 188 intelligent VDUs, 28 printers and 36 floppy disc drives.

UK article number details

DETAILS of the UK article number, a symbol coding system for retail products which could lead to computerised store checkouts and computerised stock control, have been announced by the Article Number Association.

The number, according to Stanley Maughan, chairman of the ANA, will consist of 13 digits, the first two of which will identify the nationality of the issuing number bank. The following five will identify the manufacturer, and the five digits that will be allocated for product reference. The final digit will be the check character.

UK nationality digits will be 50, and the ANA has scheduled start-up of the UK article number bank for January, 1978.

Briefing

Information policy call to Carter

PRESIDENT of the American Federation of Information Processing, Dr Theodore J. Williams, has written to President Carter to stress the importance of the US government developing a coherent national policy on telecommunications, computers and information technology.

White House advisers earlier this year also recommended that an Office of Information Policy should be established, although President Carter has responded so far by splitting up the Office of Telecommunications Policy, the main agency concerned with information policy.

Morris Edwards reports on US developments — page 32.

New IBM range

INTRODUCTION of the System 36 by IBM later this year (CW, August 4) will be another significant step in the evolution of a new IBM "range." Two other models at the lower end could follow, the System 38 and System 40, while at the top end, models 3030, 3031 and 3032 could join the 3033. But it is likely that the new range will be based on an architecture that gives more weight to functional processors, such as database and network processors, rather than the traditional CPU approach.

Olivetti launch

A SMALL, low-cost desk-top computer and a new range of terminal systems to replace the DE 500 series are to be announced by Olivetti at Sicob. The terminal systems were designed in-house and replace the series marketed by Olivetti on behalf of Sycor of the US. Details of the products are in the Sicob preview, pages 30/31.

Othello final

THE British Othello championship final will be held next Sunday, September 11, at London's Churchill Hotel. See page 14 for the Computer Weekly special Othello offer.

Home-brew rush

BECAUSE of the exploding demand for home-brew computer systems and components, a serious shortage is developing in the US. There has been a rush to set up shops all over the country and Pertec, which makes the MITS Altair micro system, plans to open 100 by the end of the year, but has had requests for 800. The kits being sold range from $400 to $1,500.

ESA contracts

MORE contracts for minicomputers have been awarded to Computer Technology by the European Space Agency. The new contracts, worth £750,000, are for "a number" of CTL 8050 units with CAMAC interfaces for use in checking the data handling capabilities of future satellites prior to launch. CTL already has £1.1 million worth of equipment installed with ESA.

Reward for four young sleuths

FOUR London youngsters who recovered a stolen Datapoint 2200 have been rewarded for their initiative by Ventek, which markets the system in the UK.

The machine, which includes a keyboard and display screen, was taken from a Ventek engineer's car when he was returning from a visit to a customer. There did not seem much chance of recovering the compact, portable machine, which is worth £9,000, but an appeal for information was broadcast on ITV's Police Five programme on the day after the theft.

A few days later the boys, Paul Ryan, David Barron, Jonathan Lynch and Stephen Shrimpton, saw the 2200 on waste ground at Kilburn, North London, a little battered but otherwise little the worse for wear. The boys decided to tell their parents of the find and one father, who had seen the Police Five appeal, realised what the boys had found.

So the machine was recovered and Ventek decided that the boys should be rewarded. Last week at Ventek's Wembley offices, they were each presented with £25 and had a chance to see a 2200 in operation, and to play games on the Datashare system. They were also given letters of thanks signed by Ventek directors inviting them to join the company when they have finished their schooling.

● Sales director, Hywell Edwards (right) is seen making the presentations to the boys (from the left): Paul, David, Jonathan and Stephen.

Co-op gives ICL £4m order

A NATIONAL network being set up by the Co-operative Wholesale Society will be based on three ICL 2960 mainframes, 40 ICL 7502 terminal systems and 30 ICL 1500 terminals worth £4 million that have just been ordered from ICL by the CWS.

ICL says that this is the largest single commercial order it has taken anywhere in the world.

The 2960s will be installed at CWS headquarters in Manchester and will replace two ICL 1904B machines there. They will provide services for 250 CWS manufacturing and distribution units all over the UK and also for more than half of the 214 Co-operative Retail Societies supplied by CWS.

ICL points out that CWS has decided to standardise on ICL mainframes. It has already replaced an IBM 370/145 and two Honeywell 200s and will shortly replace a Honeywell 2020 — the last non-ICL machine in the group.

CSA attack on plan for Europe

MDRE European co-operation with Japan and the US is called for by the UK Computing Services Association in an attack on the EEC's policy for computers.

Criticising the Commission's four-year computer plan (CW, January 20), the CSA points out that computer education and help for developing countries are ignored, and no priority is given to solving the problems that will be created by the impact of computing on employment.

The CSA also questions the EEC philosophy of viewing American technological developments in "terms of confrontation."

Years of wasted and duplicated research and development effort could be avoided, says the CSA, if partnerships could be established with US and Japanese organisations, rather than continuing to regard these as competitors.

Such long-term partnerships should aim to achieve "standard data processing environments" for the benefit of users and professionals, says the report, but adds, "The building of European competence in key areas of hardware technology is important but not crucial."

The CSA also backs the Commission's emphasis on European standardisation, and calls for it to become a focal point for basic research with a "substantial fund" to support these activities.

The association objects to forced or "encouraged" mergers, because it considers that they do not work in favour of the user as they limit choices and make the industry less flexible.

More support from government is acceptable as long as it is used to establish a computer strategy to strengthen private sector industry and create a more even balance between European and American technological developments.

Criticising the lack of proposals for the support of education and training, the CSA says there is an urgent need for investment in this area. It adds, "From the level of familiarisation down to pure research into frontier technology, Europe requires much greater effort." This should be aimed at ensuring that computing and communications become part of the European citizen's consciousness and so eliminate much of the misunderstanding about computing.

AMERICAN CONNECTIONS

To strengthen our American connections, this week Computer Weekly publishes the first of a new regular series — Letter From America by Hesh Wiener (page 29). Wiener is editor of the US magazine Computer Decisions and America's most forthright computer journalist.

In addition to his letter from America, Wiener and Becky Bems in Washington will be keeping Computer Weekly readers regularly informed of all the latest developments in the US.

EUROPEAN EXCLUSIVE:

Groucho's last interview

Earlier this year, Computer Decisions commissioned an interview with Groucho Marx. Shortly after the interview, Groucho entered the last phase of his fatal illness. This week, read Groucho's last interview. Page 16

VDUs face health probe

A "DEFINITIVE study" on the effects of visual display units on operators' eyesight and health is being planned as a joint project between universities in the UK, France, and West Germany. And the British Post Office is carrying out a study on this subject in conjunction with the Association of Optical Practitioners.

The need for such research was highlighted in Op Spot (CW, July 21), which quoted a study by the French Institute of Health. This suggested there was some evidence that certain eyesight problems could be caused by prolonged viewing of VDU screens.

Other than this French report, however, there has been little published in-depth research work on the problems.

The joint European study is being considered by the IFRA, Inca Fieg Research Association, an international organisation based in Darmstadt, West Germany, which specialises in newspaper technology. The study is expected to take about two years.

Tom Stewart, a lecturer at Loughborough University of Technology, who will be handling the UK side of the project, says that the aim is to provide a "definitive study on the subject and clear up some misconceptions." The other centres involved are the University of Paris and the Technical University of Berlin.

Stewart believes that a lot of the problems created by operating VDUs have more to do with environment and posture than eyestrain.

He points out that typists using normal typewriters, sitting in the wrong posture with bad lighting can suffer from the same symptoms as VDU operators.

● Turn to Page 4

COMPUTER WEEKLY'S INSIDE NEWS

Sicob preview

After the summer holidays, business activities quicken again, with the exhibition spotlight turning on Sicob, to be held in Paris from September 28 to 30. In his preview of this important show, Tim Palmer looks at some of the most significant products on display, many of which focus on the needs of the automated office. Pages 30/31

International news

An experiment in communications by satellite; a Canadian computer Ombudsman; Wall Street's view of the computer business — these are just a few of the stories in this week's Computer Weekly International. Pages 27 to 38

Privacy debate

Now that the BCS, CBA and DPM have come to some agreement on their approach to privacy legislation, added impetus can be given to establishing a united and forceful approach to the privacy issue. Joe Kenny contributes his view to the debate. Page 15

Going to pot

A teapot was the focus of attention at a recent conference on computer communications. Lansdown explains why. Page 13

ALSO

Computerview on roads to freedom 2
Focus on bundling 2
Progress on privacy 3
Pindar 6
Software File 6/7
People in the News 10
Op Spot 11
Microprocessor News 12
Downtime Special 16
Letters to the Editor 18
Diary/new 28
Wall Street slump 28
Book reviews 62

APPOINTMENTS

PAGES 24-26, 39-62

Willis magnetics for data storage and word processing

A range of top quality magnetics at really competitive prices. Write or phone for leaflet and details of your own equipment.

WILLIS

Willis Computer Supplies Ltd, PO Box 10, South Street, Bishop's Stortford, Herts. CM23 3DN. Tel: 0279 57641 Telex: 81742

RAF plans computer-controlled plane

THE RAF is looking at plans for a new low-cost fighter aircraft, code named the AST 403, that could incorporate a computer flight controller that would accept the pilot's verbal commands. Dangerous flight conditions could also be avoided by computer-override when manual errors are made.

Feasibility studies have been submitted by both the British Aircraft Corporation and Hawker Siddeley, but everything is "still very much at the drawing board stage" according to BAC.

Philips-Intel licence deal

A CROSS-LICENCE agreement between the Philips Group and Intel gives Intel the right to use Philips manufacturing technologies for producing MOS Very Large Scale Integration (VLSI) devices. These include charge transfer and Locos, Local Oxidation of Silicon, techniques.

In return Philips gets the use of masks and process technology for the 8048, 8035 and 8243 microcomputer products, and becomes an "official second source."

Philips subsidiary, Signetics, plans to introduce its 8048 device early next year, supported in the UK by another Philips subsidiary, Mullard. This agreement now gives Intel posts with three major European components makers — GEC, Siemens and Philips.

Printed in Great Britain by Q.B. Limited, Sheepen Place, Colchester, CO3 3LJ, and published by IPC Electrical-Electronic Press Ltd., Dorset House, Stamford Street, London, SE1 9LU.

COMPUTER WEEKLY

Vol. 23 No. 566
Thursday, September 8, 1977

Editor:
Malcolm Peltu
Deputy Editor:
Tony Higgins
Assistant Editors:
Keith Jones
Tim Palmer
John Kavanagh
Stephen Bell
Advertisement Manager:
John A. Godley
Class Ad Manager:
Mike White
Publishing Director:
Eric Ickinger

IPC Electrical Electronic Press Ltd,
Dorset House, Stamford Street, London, SE1 9LU.
Telephone: 01-261 8000
Telegrams/Telex: 25137 BISPRS G
Overseas Cables: Comweek Bisnespras LDN SE1

Branch Offices:
Birmingham
202 Lynton House,
Walsall Road,
Birmingham 228
Telephone: 021-356 4838
Manchester:
Statham House, Talbot Road,
Stretford, Manchester M32
Telephone 061-872 4211
New York:
205 East 42nd Street,
New York NY 10017
Telephone: (212) 867-2080

Published weekly on Thursday.
Registered at the Post Office as a newspaper. Price per copy 18p
© IPC Business Press Ltd. 1977

COMPUTERVIEW

More than one road to human rights

THE theme of last month's IFIP congress in Toronto was "the maturing profession". But to many of the 3,600 delegates it seemed as if hardening of the arteries had begun to set in and the best thing that could happen to IFIP was a rapid change of life.

The sheer magnitude of the event, with nearly 100 conference sessions running six abreast from 8.30 to 17.30 each day made it, like Everest, worth climbing just because it is there.

And, as usual, it attracted delegates from all around the world, to give it the international flavour that is the IFIP's raison d'etre.

Yet that flavour was predominantly Western, turning sour towards the end with the announcement that the executive of the ACM, the American computer professional body, had decided to ban contacts with Soviet computer scientists and events with a major Russian participation.

This decision was taken in support of Anatoly Shcharansky, a Russian computer scientist accused of being a CIA agent.

Those who supported the ACM stand had tried to get official IFIP backing. But the IFIP organising committee refused to take any role in the Shcharansky affair, and the international fabric that tenuously binds IFIP together remained intact.

It is easy to be self-righteous about emotional subjects such as freedom and human rights. In the context of IFIP and the growing need for the international computer community to work together to alert the world to the promise and the threat of computers, the ACM action was a dangerous precedent.

Where does concern for human rights begin and end? There are many who regard South Africa's apartheid policies as an infringement of the human rights of black South Africans.

Uganda, Chile ... the list of countries against which accusations of infringement of human rights has been made by one side or the other is virtually endless.

While boycotts and bans can never be ruled out as political weapons, co-operation and friendly persuasion can be equally effective and are an important ingredient in international activities like IFIP.

Although, in Toronto, IFIP sometimes appeared like a dinosaur with its brainy ostrich head stuck in technical sands, it is an institution, like the United Nations, worth preserving and strengthening. To abandon it and turn it into a political battlefield would be a deed of despair; a closing of the door of hope that international co-operation can be achieved.

How then could IFIP be strengthened? That is the crucial issue which the organisation must face before the 1980 Congress in Japan and Australia.

Firstly, it must become more international. In Toronto, the vast majority of speakers came from the US, Canada and Western Europe. This was particularly true of the sessions dealing with social issues like the effects of computers on employment, where speakers usually spoke of "we" as meaning the developed industrial countries of the West.

Contributions from East Europe were mainly confined to the highly technical sessions, and contributions from the developing Third World countries were virtually non-existent.

The uses of computer technology in the Third World should be high on the list of priorities for IFIP 80.

On the technical side, IFIP 77 had few sessions on microprocessors, while the excitement of the personal computer home-brewing market was nowhere to be seen. IFIP must keep more in touch with current technological developments.

And, perhaps most importantly of all, IFIP should extend and strengthen its activities in analysing and highlighting the way in which computer and communications technologies will affect societies throughout the world.

In Toronto there was a welcome number of sessions covering the impact of information technology. Unfortunately, most turned out to be poorly researched and relatively superficial talking shops. If there has been any genuine research, say into the effects of computer on employment, it was not on show in Toronto in the same way as research into, say, database technology.

Destruction is easier than construction, and despair and anger can be far more powerful forces than hope and persuasion.

Yet Computerview firmly believes that the preservation and strengthening of IFIP as a forum for constructive debate and action is of great importance at a time when computers are likely to be instrumental in reshaping many social, economic and political notions.

At the same time we acknowledge that many computer scientists hold strong personal convictions which lead them to take public standards on important human issues. This they should do in the way they best see fit. But they should always remember that there can be more than one road to freedom and human rights.

Ten years ago...

Computer Weekly September 7, 1967

A PLEA for rationalisation of punched card coding was made by Dr Paul Bonnet, director of University College London Computer Centre, in a letter to CW.

More than 5,000 employees of India's nationalised Life Insurance Bank want an ... demanding removal of ... tor equipment which ... claimed would make ... jobless ... Tests on ... control of traffic ... Grenoble and Lyons in ... plan for the winter Olympics ... Grenoble were being made ... an IAM 7044 ... The West German Science Ministry planned to set up six to eight regional computer centres. ... The first known application ... online digital computer ... to rubber production, in ... Zakhalan in the USSR, ... Ferranti Argus 300s ... for the Inter-Bank Computer Bureau ... said to be the banks' replyable Giro system, an ICT 1902 system worth over £1 m ... was ordered.

Centronics' profits

A MODEST increase in turnover is shown in the financial results from Centronics for its fiscal year, ended June 30, 1977 unaudited turnover for ... was $58.1 million, compared with $52.2 million in fiscal 1976 while net profits increased from $$1,763,615 to $12,550,000.

FOCUS ... on unbundling the alternatives

BUNDLING, as a DP topic, has been happily dormant for some time. In fact, most of the computer industry fondly believes that bundling represents a "blast from the past". By now it would be assumed that each and every knot and tangle has already been unravelled and the user set free.

Apparently, however, there are still some isolated tangles about. Only last month came the news item that Honeywell is about to unbundle its operating systems (CW, August 25). It seems that the DP liberation movement in the UK is not yet over. Manufacturers are taking unnecessary time in giving the customer total dependence.

As a race, certain manufacturers still choose to pedal hard, backwards, preferring to see their customers firmly shackled to their respective databases. Any attempt by the user to make a break and run for the independent shore, brings considerable anguish plus not a little pressure from the mainframe suppliers. Pitfalls of independence would include:

- Manufacturers' service teams might well be reluctant to maintain a mixed configuration. Even the introduction of an alien mag tape has been known to cause raised eyebrows.
- Guarantees of machine performance might have to be revised if plug-in alternatives are added to the configuration. The site salesman implies that his manager would be very disturbed with his performance.
- Future distribution of help and advice will be a fully chargeable item. No longer need the programming team provide a spare desk for on-going assistance. As a result, it could well result in the DPM having to take the salesman to lunch in order to glean information.

Independence of course, has been the making and perhaps a little breaking of DPMs. It has prospered. Any DPM who has not got the "alternative" message — preferring to shelter under the mainframe umbrella — may discover himself to be running a feudal system only one cycle away from a small business system.

It has not just been the equipment and system which was unbundled. The DP professional has been exposed to the real world of technology.

The DP manager is now very much part of the "alternative society". Never before has the DP team been faced with such a profusion of alternatives. Whether it is a new method of data capture, user applications or pure power enhancement, the user has an almost open-ended choice. But it is a choice which must not be neglected.

Consultants must discover that there is more to their expensive responsibilities than an automatic recommendation for an IBM mainframe as being the best buy.

Bodies such as the NCC and DPMA must concentrate their resources on organising practical decision-making training sessions. The current list of NCC courses, for example, leans heavily on design and concepts. Not one course is scheduled on keeping heads above the decision-making storm-floods. What is desirable is less structured programming and more structured DP workshops.

Meanwhile, DP managements stagger under the responsibilities of performing in an active marketplace while the art of mini/micro systems is equally staggering. But it has certainly had its day while this lasted, the professional has never had it good. That particular game has been dumped along with last year's abortive computer ...

INTERRUPT...

Peter Williams, a computer man in the City, has contributed the second in our new series of modern Aesops Fables—true computer stories cloaked in anonymity to protect the guilty and the innocent, with a moral to be learnt. Computer Weekly will pay £8 for any published fable from a reader.

ONCE upon a time there was a university which had a super sophisticated computer system with all sorts of passwords and more levels of protection than the Bank of England.

One morning the operators loaded the operating system in preparation for the day's processing, but instead of getting the normal console messages all they got out was "This computer system is held to ransom and we demand £5 million or else we will not release the system to you."

It then went into a loop.

Guess what: some bright spark had asked a few questions, got into this super-secure system, changed his protection level, all the passwords and the system itself. All the operators could do was go back to the last version of the operating system.

And the moral of this story is: Don't let too many people know too much about what's being done to lock them out of the system, or they might find out how to get in and lock you out.

Datafair forum on 'information society'

SINCE 1971, Japan has been laying plans for the "post-industrial" or "information" society which forecasters believe is dawning in most developed countries. Japan believes that the computer industry, combining the storage of knowledge with materisl and energy conservation, without polluting the physical environment, will have a key role to play in the revolution.

At Datafair next month, Mr Kaoru Ando, executive adviser to Japan's leading computer manufacturer, Fujitau, will review the tendancies, and ask whether the "information society" is the right answer to the problems of advanced countries.

Mr Ando has been studying the problems since 1971, and was prominent in proposing that Japan develop a plan for the post-industrial age.

Datafair will be held at the Cunard Hotel, Hammersmith, from October 4-6.

Turing award

Winner of the 1977 ACM Turing Award is John Backus (above) an IBM Fellow at the company's San Jose research centre in California.

Backus gets the award for "profound, influential and lasting contributions to the design ... of high level programming systems, notably Fortran."

The award, which also carried a $2,000 prize, is given by the ACM as an annual commemoration of Dr Alan Turing, one of the leading pioneers of computer techniques.

The ACM Distinguished Service Award for 1977 has gone to Thomas Steel Jr, for his work since 1965 on various industry bodies including the ACM.

Doubts on hobbyist market

A RESEARCH report from IDC Europa has thrown doubt on there ever being a viable 'hobbyist' computer market in the UK or Europe. The IDC newsletter, Micro Market Monitor, quotes the report as giving three reasons against a US-style boom.

The first is the European "arts" mentality among people who could afford personal computing, detectable as a bias against direct involvement with technology; second is the cost which, although falling significantly, is still high in relation to disposable incomes in Europe; and thirdly, it is pointed out that there are few marketing outlets.

The report points to the possibility of a heavy franchise operation being launched from the US in an effort to create a market. With the entry of the TRS-80 system from Tandy early next year, such an effort will no doubt be made.

But the report does point to a European market for personal computing products, and that is in the professional sector.

Worldwide privacy laws progress

TWO big steps towards international legislation on data protection are being taken later this month with meetings organised by the Organisation for Economic Co-operation and Development in Vienna and, a week later, by the Council of Europe in Strasbourg.

The Vienna meeting will be on the effects and trends of transferring data across frontiers. It will be open to any interested parties, and UK representatives will include David Firnberg, director of the National Computing Centre, who will speak on security standards, and Alan Benjamin, director-general of the Computing Services Association.

Views expressed at that meeting will be considered in the following week when government representatives meet at the Council of Europe. This meeting will formally approve the council's recommended privacy regulations for medical databases (CW, August 18) and discuss the first draft of a proposed international treaty on data protection (CW, March 3).

ICL big disc terms put off 1900 users

LONG negotiations aimed at getting ICL to allow the 200 Megabyte disc units to be used with the 1900 series as well as the 2900 range (CW, November 30, 1975) have been to no avail. Although ICL has agreed to the users' request, 1900 users have found that the cost and performance of the EDS 200s does not make it worthwhile switching from the 60 Megabyte EDS 60s.

Users had indicated that ICL would get 350 orders for EDS 200s for use with 1900s, but only half a dozen installations have ordered any.

"ICL criticised us because of this, so we did a survey of users to find out what had gone wrong," said Dr Howard Wrigley, chairman of the ICL Computer Users' Association. "We found that the terms and conditions offered were in no way related to what users had assumed. There was no cost advantage.

"Users did not get the fast transfer rate because the disc processor was not the one used with 2900 series computers. ICL advised users to keep some EDS 60s for systems programs as they were faster than EDS 200s.

"In addition, the EDS 200 controller cost one and a half times more than the EDS 60 controller, and while there is a 50 per cent discount on EDS 60 drives after the first one, there is no such discount on EDS 200 drives. This meant that the users interested in EDS 200s — those with a lot of EDS 60s — faced quite a big outlay. And these users would have gained extra discounts when they got their EDS 60s which they would not get with the EDS 200s. This makes it worthwhile getting a few more EDS 60s rather than moving to EDS 200s."

In reply ICL said, "A prime reason originally quoted by the users' association for wanting EDS 60s on 1900 series systems was the limitation on file capacity due to the physical space in user installations. ICL did not introduce the product merely to be price competitive with EDS 60s."

ICL pointed out that EDS 200 maintenance cost users significantly less than EDS 60 maintenance.

Dr Wrigley said the users' association would not press the matter with ICL unless users reacted strongly.

Some feedback of users' views is expected at the association's council meeting next month.

Firnberg calls for more user influence

COMPUTER users have little, if any, influence on government decisions which may have far reaching effects on them, so they are one of the least protected groups of consumers in an increasingly consumer-oriented society.

This view was put at the European symposium of Digital Equipment users on Tuesday by David Firnberg, director of the UK's National Computing Centre.

Firnberg said user groups performed a valuable role in building working relationships between themselves and their common interest, whether that interest was a particular type of computer or application. But, he added, there was a gulf between users and those who made national and international decisions on matters likely to affect them. "Users only react when it is too late to change the decisions," he said.

Firnberg added, "User societies have very little effort available to consider long term matters, and yet to influence policy decisions before they are taken requires an involvement long before their impact is likely to be felt by the individual computer user."

Topics where users should be involved at the early stages of decision making were listed by Firnberg as including computing standards, networking, privacy and security legislation, and accounting practices.

STC offers mass storage alternative to IBM

AN alternative to the IBM 3850 mass storage system using very high capacity disc drives rather than magnetic tape cartridges, is being developed in the US by the Storage Technology Corp.

The STC system will use drives with capacities as high as 2,500 Megabytes, and these will be linked to the CPU via a high speed buffer using charged couple device, CCD, or bubble memory technology.

The system will be controlled by a processor with a power equivalent to an IBM 370/138 and this will be able to make the system look like a line of tape drives to the host CPU.

STC already manufactures a plug compatible alternative to the IBM 3350 high capacity disc drive called the 8350, and STC hopes to increase the capacity of its drives by a factor of four over the next three years.

IBA switches to Honeywell

THE Independent Broadcasting Authority is to replace its General Electric Model 615 computer with a £660,000 Honeywell 66/10 system in November. Two main databases will be transferred to the new system. The first covers broadcasting statistics for programmes and schedule analysis, and the second is a financial database covering payroll, financial accounting and stock accounting.

The configuration will be the 66/10, with 256K main memory, a Datanet 6624 communications processor, three 200 Megabyte discs, five magnetic tape units, line printer and card reader. It will be connected to the 30 VDU terminals already operating with the Model 615.

ICL System 4 users form their own group

USERS of ICL System 4 computers are breaking away from the ICL Computer Users' Association to form an independent group.

The move, which weakens the case of the main association in its dealings with ICL, is being made because System 4 users feel they will get better service if they deal with ICL directly rather than through the association.

The decision to break away was taken last Friday when 90 per cent of System 4 users voted in favour of the move.

"We have been assured by ICL that we will have full support from them," said Ron McDonald, chairman of the System 4 group. "We have a good relationship with the company. They pay attention to us, probably partly because we are potential 2900 customers.

"We know we are cutting off the line of communication with the 2900 and 1900 users, but we didn't get a great deal out of it anyway."

McDonald said there were about 100 System 4 installations worldwide, most of them in the UK. Up to 80 people attended meetings of the sub-groups on programming, operations and multi-job systems.

Dr Howard Wrigley, chairman of the ICL Computer Users' Association, said he was disappointed at the move. "It weakens the CUA's case," he said. "We can't claim to be fully representative of users."

Dr Wrigley added that he could not see that the move was in the interests of System 4 users. "There are matters of special interest to them," he said, "but how many matters of that nature will there be in the future?"

PRS opts for a 2960

AN ICL 2960 has been installed by the Performing Right Society in London to handle royalty accounting for writers, composers and publishers. The system has replaced an 11-year-old 1902A.

"Our computer regularly 'converses' with its counterpart at the BBC in order to analyse broadcast music down to the last second so that we can accurately calculate payments," said Leon Radford, head of management services.

The 2960 will be installed at the PRS' headquarters in Berners Street.

Expanding future forecast for time sharing

Mike Culver . . . taking on 80 extra staff to cope with increasing demand for Mark III service.

DESPITE the development of powerful, low-cost small business systems and the accelerating growth of company networks using various forms of distributed processing, time sharing services can look forward to an expanding future.

That is the view held by Mike Culver, director of Honeywell's UK Network Information Services Division, who also shares responsibility for operations in Italy and Australia. The division distributes worldwide the Mark III time sharing service which is owned by GE of the US and marketed by Honeywell in most of Europe and in some other parts of the world.

To cope with the increasing demand for the service in the UK Culver is taking on 60 additional staff during the next three months and expects to nearly double his present staff of about 200 professionals by the end of 1978.

The present intake of recruits are being selected from those who responded to an advertising campaign which was directed at experienced personnel outside the computer industry. There were nearly 1,000 applicants who came from such areas as accountancy, company management, various industrial fields, and from the City.

It was decided to use these tactics because recruiting from inside the company and within the computer industry had not resulted in sufficient numbers to cope with the expansion that Culver envisages.

In the UK the Mark III service is used by between 800 and 1,000 organisations, some of which have several user departments linked into the network. Expenditure by users ranges from less than £1,000 a month to over £300,000 a year.

Improved accessibility is continuing to extend the coverage of the service, and there are now 20 access points in the UK giving users in most areas a link into Mark III for the cost of a local telephone call.

This expansion of the service has been necessary to meet demand, and despite competition from about 20 other time sharing systems in this country, Honeywell's UK operation accounts for about as much business as the whole of its European counterpart. In revenue, however, the Europeans turn in more because of higher costs on the Continent.

There are about 1,000 packages, some very specialised, on Mark III, but most business is concerned with the 10 most frequently used systems mainly based on Fortran. This offers a compiler and a range of program generating packages covering data management and financial applications. Basic and Algol are available on the interactive service and Cobal, Fortran and Assembler on the background remote batch service.

Customer files are stored on one of the central file systems or clusters, of which there are five located at the network's "super centres". There is one cluster in Amsterdam, and two each in Cleveland, Ohio, and Rockville, Maryland. Files and programs built up by customers are usually allocated to the nearest centre but may be loaded on one of the others to help smooth out the workload. Should the need arise through some malfunction of equipment, communications lines or public networks, files can be switched to a different file cluster to ensure uninterrupted service. Over 80 per cent of customers' files are maintained online.

The economic database service is now available in the UK and Europe, and the MAP system for econometric modelling and forecasting has now been updated to include European and EEC data.

Software AG takes over Adabas in UK

MARKETING and support of the Adabas database management system in the UK is now being handled by a company set up by Software AG, of West Germany, developers of Adabas. The system was previously marketed by Adabas Ltd, but the franchise has been withdrawn because that company, together with others in the Leonard Griffiths Group, ceased trading at the end of August.

The new company is headed by Len Jenkinson, formerly general manager of Adabas Ltd, and it is also taking over all technical staff. Existing maintenance agreements with Adabas Ltd will be honoured and Jenkinson says the new company expects to improve support services now that Software AG has a direct interest in the operation. Future plans include joint developments, particularly in the data dictionary area.

Adabas Ltd was one of the subsidiaries of Griffiths Professional Services Ltd of Dec[illegible] which was set up in 1972 by Leonard Griffiths, who was formerly with the ill-fated Systems International (CW April 6, 1972).

The other subsidiary is Leonard Griffiths and Associates, which was involved in some major projects, including the Ministry of Defence Grid which developed into Butec West; the British Gas Unicorn 1106 implementation at Hinckley, Leics; and a study of the EEC's import/export operations.

The group took over the Adabas marketing of Adabas three years ago (CW, April 11, 1974), and this year it opened a London office to cope with expanding business.

As Computer Weekly went to press, no senior executives of the group were available for comment on the decision to cease trading.

VDUs face health probe

● From front page

"Many users have to be educated how to use VDUs," he comments. This conclusion is supported by IBM, which has been monitoring the problem in its research and development projects.

An IBM spokesman commented, "We have had visual display products in use on a daily basis for more than 12 years at IBM and at customers' locations. No problems have been attributed to individuals due to the use of such equipment."

A Hewlett-Packard spokesman said that the company had decided to settle on raster scan VDU tubes because their research showed that such tubes were easier to view in brightly lit rooms than storage tubes.

The Post Office study, which is likely to span three years, will consist of testing the eyesight of 1,600 postal workers who use VDUs. The same tests will be repeated after three years to see if the VDUs have had any noticeable effect.

● Anyone who would like to contribute to the HFRA study by citing examples of what they believe are definable effects of VDU can contact Stewart Salvendy at University of Technology, Loughborough, Leics LE11 3TU.

Digital design seminar

A SEMINAR on digital electronic design is to be held at Theobalds Park College, Waltham Cross, from October 26 to 28. Organised by Computer Associative Modules Ltd, it will cover a wide range of problems encountered in digital equipment design. For further information contact Computer Associative Modules Ltd, St Albans

GILB'S MYTHODOLOGY

Do database languages help programmers?

This month Gilb disposes some of the popular myths that surround database techniques.

PERHAPS some database languages do help some programmers to program particular applications. I would, however, like to comment on the following assertions:

- The net productivity of database languages like the Codasyl family or IMS is not convincingly demonstrated and documented.
- The present languages are already obsolescent in terms of present and future needs and economics.
- The languages encourage the use of complex file structures, which results in a greater net loss of human time, machine time and money than any documented gains can justify.
- The obsession with languages has already obscured the need for technological know-how in the really critical areas of database design such as reliability, maintainability and portability.

On productivity

I have spent eight years searching the literature, badgering IBM, talking to theoreticians and practitioners of database management, trying to find some convincing evidence of the programmer productivity effect of database languages, in particular Codasyl-based languages and IMS.

I have collected a number of results, but they have all been clearly negative (total failure, five-year delays, incredibly high system programmer support costs) or the "savings" were doubtfully measured assertions which did not even try to account for present and future cost increases which probably offset even these supposed savings.

Typically the increase in machine costs was high (a factor of 2 to 5 is freely admitted by machine suppliers) and the costs of maintenance of the software itself are high (from three to dozens of DB software specialists), while the future extra burden of conversion (even to stay with the same supplier) has not even been seriously considered (like a contract guarantee).

I would not be impressed even if someone did prove that programmer code-writing and testing productivity was improved, if it was within the framework of an overly complex file design, which was not really necessary to satisfy real user requirements.

Productivity should be measured in terms of help in implementing clean and simple designs which serve both short-term and long-term user interests.

On obsolescence

The present languages give too much explicit control to the programmer, and contain too little automation of design of data structures, too little analysis of activity, and too little software for automatic re-adjustment or optimisation of space, speed of access, speed of reading large parts of the file, and other optimisation goals.

At one point I noted that 18 or 20 Codasyl database verbs were concerned with space or speed optimisation. This task is, especially in the long-run, best left to self-organising database software.

The obsession with the obsolete database concepts has stolen energy from research and development of such software, but the high cost of human database competence, the lower cost of computer power, and the impossibility of human maintenance of database performance in the long run through rapidly changing conditions, will, I believe, force the development of a far higher degree of automation in the design and maintenance of database structures.

The development of such systems is a parallel to highly automatic operating systems and to high level optimising compilers. The language base can be a highly simplified subset of present standardised high-level languages, shorn of frills needed only for manual control over optimisation of space/speed.

The only new language constructs needed are simple optimisation-goal specification, which can be an "economic" optimisation by default.

The next point which threatens present developments is the increased use of distributed databases. The resulting need for software to control this environment threatens present languages and software packages.

A similar threat is the increased use of minicomputers, for which anything like full versions of Codasyl or IMS are unsuitable due to the invish overhead costs which mini users are too mature in their economics to accept, as did the sheep of the maxi-generation.

Finally, some form of standardisation threatens all present languages to some degree, even if they are the basis for the standardisation. We have only to review the history of Cobol, and the costly Cobol to ANS Cobol conversions, to be reminded of the threat of high forced conversion costs.

If anybody still has illusions about IBM's continued support of IMS, they should try to get a 10-year support guarantee in their contracts. If its future was so certain, why won't they give such guarantees?

On overcomplexity

Really small databases don't need complex software support systems, and they cannot tolerate the high overhead costs involved. Really large databases can even less afford a machine cost multiplier of 2 to 5, which seems to be inherent in complex systems.

Such large systems can justify brilliant design expertise which is able to produce starkly simple and efficient designs for the-ness of the volume to be stored and handled.

Complexity is added for exceptional and low volume needs in such a way as to not create permanent overheads, or at the time the request for information or change is needed.

There is an easily documented lack of fundamental training in datsbase (that means "file," of a special sort) tschnology. People know they don't know enough, so they jump to the incredible conclusion that they have to get a complex file organisation system to "help" them.

They are fools, of course, because those monsters demand even more expertise to contain their uncontrolled hunger for both people and machine resources. But the suppliers have no interest in confronting us with this unpleasant fact.

I leave you with the following thought: Gilb's hypothesis on database software:

Most users are either too small to justify the fixed overhead costs, or too large to justify the cost multiplier for IMS or Codasyl-like database software. Presumably there is a group in the middle, but nobody has convincingly documented it.

SOFTWARE

Neat/3 to Cobol pack wins first US client

THE first US client has been gained for the Necol program conversion software, developed by UK consultancy and bureau Computer Facilities (CW, July 28).

And at the same time, the expected West German agency agreement, with Euroco, has been concluded (see picture above).

Necol, which converts programs from NCR's Neat/3 to ANSI Cobol, has been purchased by the Howard Community College of Columbia, Maryland.

The college plans to convert 40 programs, and has been provided with a Necol disc pack tailored to convert the appropriate amount of code and then stop functioning.

A number of US agencies, to cover the country adequately, are being negotiated, and Computer Facilities' managing director, John Midgley is to visit the US next month to finalise arrangements.

Euroco Software Systems GmbH, of Hamburg, has been appointed sole agent for West Germany. The company will, as well as prepared Necol disc packs, also will also operate a conversion service, using its own IBM equipment in Hamburg.

Our picture shows John Midgley signing the agreement watched by Chrissa Triandafillou, general manager of Euroco in Hamburg (centre) and John Connolly, managing director of Euroco London.

Infonet gets Dissplа pack

THE versatile graphics system Dissplа, from Integrated Software Systems, of California, has been implemented on Computer Sciences Corp's Infonet bureau network.

Dissplа provides a wide range of plotter and visual display graphics, including two- and three-dimensional graphics, stored maps and character generation in several alphabets and styles. Calculations of data values as gradients and integrals can be done directly from the graphs.

APL service

A SECOND company, Scicon Time Sharing, is to offer APL bureau services to European users on an Amdahl 470 V/6 mainframe.

STS plans to link its European offices in Frankfurt, London and Paris to the 470V/6 via Tymnet and Telenet networks.

DIY implementation

ANOTHER program is to be released to aid calculation of the effects of inflation in computer-aided accounting systems. Aimed at the building trade, it will be issued in a novel form.

The Fortran source-code will be published as part of a general guide to contract price adjustment, and users will be left to implement the program on their own machines.

The National Economic Development Office (NEDO) publishes a monthly series of "indices", showing the effects of inflation on various material and labour costs in building. These have been adopted as the yardstick for charges on most government contracts and some private jobs.

With a complex contract, involving a number of different factors, calculation of the final price could prove complicated. The program, known as Furpa, and produced by the Design Office Consortium, will interface with computer-based accounting systems using these calculations.

The guide, with the Furpa specification and code, is to be published at the end of this year. A price has not yet been decided.

Puzzler

TWO straight partitions of equal length (one incorporating a door to provide access) have been cleverly placed so as to enclose the maximum floor space in the corner of a rectangular room. At what "interior angle" do the partitions meet?

See page 63 for solution. Note: this obvious 90° answer is incorrect.

EDITED BY STEPHEN BELL

OS facilities for DOS/VS users

AN online program development package claimed to give IBM OS facilities to DOS/VS users is being introduced to Europe by Computer Program Products, the marketing subsidiary of Computer Analysts and Programmers.

The system, called Vollie, or VS Online Librarian Extended, was developed in the US by Applied Data Research as an extension to its Librarian program library management system. Librarian is already sold in Europe by CPP.

"Traditionally only the big users have used OS and the others DOS/VS; but now there's a new breed of DOS/VS users with big 370/135s, 145s and even 158s who want more sophisticated facilities," said Alistair Jacks, manager of CPP in the UK. "Vollie provides those facilities under DOS/VS."

Vollie gives online access to the Librarian source program file, private source libraries and to the DOS/VS system itself. It provides online syntax checking of Cobol programs and job control statements, a feature Jacks described as "unique."

A split screen format enables users to see the original and amended coding at the same time.

As well as providing online updating facilities, Vollie also enables the user to see and control the spooled job queues. Jobs can be entered in the input queue and retrieved from the output queue via a terminal.

Jacks said that Vollie can be used to set up complete command procedures such as compile, link edit and run sequences and call them up as needed, thus avoiding having to prepare the job control statements every time.

Vollie will be available in Europe by the end of the year. It will cost a single payment of £9,000, although existing Librarian users can add it to that system for £6,000. It will be supported throughout Europe by CPP.

More flexible

A REDESIGN of parts of Gordon and Gotch's Modular Accounting Plan software has resulted in a new release. Designated MAP Mark. III, it is claimed to be more flexible than previous versions, so that a user can adapt it to his current data organisation and human interface formats.

MAP is available to users of Burroughs 1700 and medium-sized machines.

Compiler boost for Series 1?

A COBOL compiler developed by an independent software house could soon be marketed by IBM for its Series I minicomputer. IBM is known to have been negotiating with the company, Advanced Software Products of Arlington, Virginia, US, within the last month.

Advanced Software Products' compiler costs $1,800 (£1,030) plus $200 (£115) for a run-time monitor which executes the compiled program.

IBM has already announced PL/I and Fortran for the Ssries I, although Fortran will not be available until next month and PL/I next year (CW, April 21).

The company is understood to be working on its own Cobol compiler, although this is not expected until late next year.

US sources pointed out that if a Cobol compiler were made available, the sooner the Series I would be able to compete more strongly against machines from Digital Equipment, Data General and other manufacturers whose minicomputers already support the language.

Meanwhile another software house, Systems Management of Clemson, South Csrolina, US, has introduced an RPG II compiler for Series I which is claimed to support programs from System 32.

Planned enhancements include multi-terminal support, and screen formatting routines for display terminals. The compiler costs $3,000 (£1,720).

Following up Gilb's ideas

THE stimulating ideas proposed by Tom Gilb in his regular column (see page 6) can be followed through in more depth at one of a number of courses presented by Gilb in conjunction with Infotech International.

He will be giving a course on advanced programming management techniques in Copenhagen from October 31 to November 4. From November 15 to 21 he will be discussing how to choose the best system in London.

Reliability improvement techniques will be his subject for another London course from December 5 to 9.

Infotech International, Nicholson House, Maidenhead, SL6 1LD, UK. Tel: 0628 32585.

PROGRAMMER NOTES

The need to live an operator's life

FURTHER thoughts on operations experience as a suitable background for a programming career come from programmer / analyst Michael Hall, of Sheffield who, like Laura Coaker (CW, August 18), entered programming via operating.

"Knowledge of mathematics beyond 'O' level is not required for the majority of commercial programming tasks, but an understanding of the operating environment is essential to the design of efficient computer systems and programs", said Hall.

The value of such experience was, he maintained, a powerful argument for the interchangeability of jobs between operators and programmers.

Programmers who experience at first hand "the stresses and frustrations of regular shift working, insufficiently documented test jobs, recovery and restart procedures, etc.", could, as a result, write programs which made the operator's life easier and, hence, could be developed and run more quickly.

In very few installations did the programmers and operators actually interchange jobs, however. Hall implied that much of the fault here lay with the programmers, who "see operating as a semi-skilled job.

Is he doing programmers an injustice? Would many of you like to gain some experience of operating? Does the fault lie rather with DP managers unwilling to introduce sufficient flexibility into their department?

One interesting point raised by Ms Coaker, but not commented on by Hall, was the possible benefit of job flexibility in terms of programmer / operator friendliness. One hears lurid stories from many installations of programmers not on speaking terms with operators and the disastrous consequences of this non-communication. Is this a true picture of a significant proportion of installations? Would a blurring of "demarcation" lines improve or worsen the situation?

Programmers and operators are invited to present their personal experiences, anonymously, if they wish, so as to avoid the danger of further deterioration in relations!

Are a large proportion of programs and systems really written in a way which makes life difficult for the operator? In what ways could they be improved? Have any installations embarked on a concerted effort to ensure that programs are "operator friendly"?

On a different front, Tim Martin's ideas for augmenting commercial programming languages with a "delayed write" (CW, August 25) have quickly provoked alternative suggestions. Nick Hawkins, of London suggested that each record could be written immediately after it has been formatted, and, if it was required to cancel a whole set of records, a "cancel" record could be written to follow the set. At a later stage — for example, during a sort — the cancelled sets of records could be weeded out.

market place

WANTED · ANALYST · PROGR · Dataprinter · FOR SALE

For Advertising Rates PHONE 01-261 8757

TE

NEW TELETYPE 38 ASR

UNDER £1,000 DUTY PAID plus delivery and VAT. Still the most popular, economical, reliable and versatile terminal. Delivery 4 weeks.

Also rental and after sales service.

Teleprinter Equipment Limited, 70-80 Akeman Street, Tring, Herts HP23 6AJ. 0442 82 4011 (7 lines), or Telex 82362.

IF YOU ARE THINKING ABOUT **BUYING, SELLING OR LEASING New & Secondhand IBM Computers**

CONTACT LOGAN WHITE

MEGALEASING LTD

Megaleasing Limited
58 Grosvenor Street
Mayfair, London, W1X 0DD
Telephone 01-491 7774
Telex: 27195

CRB A Computer World Trade Company

PROFIT FROM YOUR COMPUTER WASTE

by contacting London's BEST BUYERS
DATAWASTE LTD
99 Welsman Road
Fernel Green
London NW10 6DH
01-850 1000

COMPUTER RESALE BROKERS INTERNATIONAL LTD.
Queen's Hse, Holly Rd, Twickenham, Middx TW1 4EH. Tel: 01-891 0731. Telex 935122

FOR SALE

P.D.P. 11 equipment: Memory.
MMIIL, DEC printer L.A.180.
R.K.05 Disk & Controller.
Teletype A.S.R.33

Tel. 01 628 8413

COMPUTER WEEKLY

The following special supplements are due to be published during **SEPTEMBER**

SYSTEMS and SOFTWARE HOUSES/ EUROCOMP PREVIEW

September 15

Software can truthfully be said to be the life blood of the computer system. Without some controlling software, the most advanced computer hardware is incapable of performing even the simplest tasks. The falling cost of hardware has also made software an increasingly important factor in the costs of running a computer installation.

On September 15 Computer Weekly will publish a special supplement on 'Systems and Software Houses'. In this issue, we take a look at some of the types of software which the user of today is likely to be seeking — from data dictionaries to applications programs — and experts in the field give some guidance on selection. We also highlight some features of the changing shape of the software industry.

DATA STORAGE MEDIA

September 29

Data storage media can come in widely different forms these days — anything from the humble punched card to the multi-Megabyte semiconductor main memory with a fraction of a microsecond access time.

Some of the most important developments in this wide area include the practical application of bubble memories, the proliferation of floppy disc storage, and the rapid increase in the densities of MOS memory and mass disc storage. The Data Storage Media Supplement on September 29, will cover these subjects among others and include information and views from suppliers and independent consultants.

LONDON AND WESTERN
Stephen Measures 01-261 8293, Tony Kaminski 01-261 8022, Steven Martin 01-261 8109, Lloyd Collins 01-261 8787.

MIDLAND
Ken Parrott 021-356 4838

NORTH AND SCOTLAND
Harry Aitken 061-872 4211

DATA? Be prepared

... For peaks, holidays, absences, crises.

We are — with over 130 data prep staff, with experience covering most equipment and with output on cards or tape (7 or 9 track).

Prepare to cope with your next data overload;

BOC Datasolve

Ring John Bazzant
BOC Datasolve Limited
Datasolve House
99 Staines Road West
Sunbury-on-Thames
Middlesex
Telephone 76 85566

---

tectonics guarantees **12 MONTHS FREE SUPPORT** on all development projects, from one-off programs to major systems

contact Terence Salmon ORP 2...
Tectonics Ltd 54 Tintagel Rd Orpington
The fixed price fixed time specialists

KIT OR BUILT **VDU MPU** CROFTON ~ 01-891 1923

370/138

DOS/VS — power/VS

TIME FOR SALE

South Midlands
Very competitive rates

TEL: 05253 2031
Extn. 128 or 252

USED DP EQUIPMENT BUY, SELL, LEASE

Knowledge of U.S. and European markets

Write or telephone:
JORDAN HALPER
CEDAR COTTAGE
THE DRIVE
CHICHESTER, SUSSEX
0243-527 494

FOR SALE 3145-HO1 256K

£100,000 ex EEC. First offer secures
Apply Box 1889, Computer Weekly
Available end of December, 1977

WANTED

Secondhand electronic equipment of the following types:

D.E.C. PDP8Ms, PDP8As, VK8Es and VK8As.

I.T.T. (S.T.C.) ADX6300 Systems

Please ring: 01-353 6060 Ext. 57 with full details of equipment with price, etc.

---

tap

IBM COMPUTER TIME and Bureau Services Central London Attractive Rates

PHONE
01-836 0355
01-242 9283

Time and People Limited

WANTED

Olivetti P603 Computer
EOB Equipment Ltd.
BCM Box 678
London
WC1V 6XX
Phone:
01-404 5011

Edward de Bono's NETWORK for thinkers

(a new communication service and action group)
For details send s.a.e. to: Network (C), 22 Pentlands Court, Cambridge CB4 1JN.

FOR SALE

Moore Reed mini-port teletype with acoustic coupler (ASCII code)
£950

Wilkes "4-part" decollator.
£775

WDP Call: 01-464 9011

TELETYPES

Hiring, Repairs, Overhauls, Refurbished Machines. Maintenance Contracts.

Make a phone call — Save a possible 25%

COMPUTER TERMINAL SERVICES

Medway (0634) 407001

COMPUTERS—PERIPHERALS ETC.

IN — OUT

WE BUY — WE SELL
HARD CASH — COMMISSIONS

Scopes, Test Gear. Anything considered

Phone: READING (0734) 586419
7/9 Arthur Road, Reading

Birmingham/Midlands

370/135 — 512K TIME AVAILABLE

Long- or Short-Term plus services

For details ring:
021-707 4600
Ask for Phil Hall or Barry Hogarth

PDP 1104 FOR SALE

64 KB
2 x 2.4 meg cartridges
1 x 150 cps printer
2 x Beehive VDU's . . . RSTS4

Contact Welson Computer Services Ltd.
Tel. Rawtenstall (STD 07062) 29125

TELEPRINTERS — 120 CPS

- Available in KSR and ASR versions.
- Switch selectable speeds up to 120 cps.
- ASC11/APL keyboard.
- Options include Vert/Hor Tab, FIFO Buffer etc.
- Nationwide Sales and Maintenance.

Area Sales Tel:
Midlands 021-459 5969
Scotland 041-221 8781
Wales Chepstow 2183

DATA DESIGN TECHNIQUES LTD.
5 Watkin Road, Wembley, Middx.
Tel: 01-903 8977

As a result of our client's upgrades and reconfigurations

GAMMA ASSOCIATES LTD.

has the following DEC PDP11 equipment for sale

(Some immediately, the rest during the next three months)

All DEC Equipment —
PDP 11/20 (used)
PDP 11/40 (used)
PDP 11/40 (unused)
RK06 Disk Subsystems (new)
RK05F and RK05J Disk Subsystems (new)
VT52, VT50, LA36 Terminals
LA35 Printers
MT2 58 Interfaces
H950—CB Cabinets

Phone Chris Crook 0602-49565 or Telex 377 817 for configuration and price details.

GAMMA ASSOCIATES LIMITED

FOR SALE DEC PDP11 Equipment

FOR SALE OR LEASE I.B.M. EQUIPMENT

DESCRIPTION

CPU 360/40-128K; 2 Selector Channels.
DISKS 1X3333 — 1 with 8150 string switch
2X2314-001; 9 driver each
TAPES 2415 MOD 4; dual drive (30KB 1600bpi) with controller
I/O 1442-N1; card reader punch with controller;
2821-2 printer controller
1403-N1 1100 lpm printer

AVAILABLE Jan/Feb NOW Jan/Feb Jan/Feb Jan/Feb

WANTED: ALL 370 CPU's and PERIPHERALS
Contact: Peter Hunt, COMPUTER FINA...
68 Rosebank, Holyport Road, London SW6...
Tel: 01-385 4278; 01-385 8877. Telex 26...

ELECTRONIC BROKERS LTD

NEW 80 Column Hand Punch

- redesigned incorporating latest production techniques
- Modern styling and attractive blue machine case
- no hidden extras — alpha-numeric key tops, wreck knife, chip tray and dust cover all standard
- 12 month warranty

Send for Brochure

WE BUY WE SELL

SCOOP up to 45% OFF HAZELTINE

Teletype-compatible CRT Terminals

HAZELTINE 1000
960 Characters,
full/half Duplex.
New list price £900
OUR PRICE £628

HAZELTINE 2000
1998 Characters Editing.
full/half Duplex and batch mode
New List Price £1840
OUR PRICE £895

HAZELTINE 1200
1920 Characters,
full/half Duplex
New List Price £941
OUR PRICE £725

All units factory - refurbished to as-new standard and covered by 90-day warranty. All prices subject to carriage and VAT

- 12" Diagonal Screen
- TTY Format Keyboard
- 64 ASCII Character Set
- 5x7 Dot Matrix
- Switch-selectable Transmission and Parity
- Standard CCITT V24 Interface

ELECTRONIC BROKERS LTD. (Computer Sales & Services Division)
49-53 Pancras Road, London NW1 2QB Tel: 01-837 7781
TELEX: 298694

Contract Operators, Programmers, Key Punch Ops.

phone 491 4706

Knight

ELECTRONIC BROKERS MINI COMPUTER EXCHANGE

DEC PDP8 and PDP11 Series Minis and Peripherals.
ASR33 & KSR33 Teletype Terminals — fully reconditioned
Coded and Uncoded Keyboards. Magnetic tape platters.
Latest arrival — super PDP8 SYSTEM
DECPOP8E 8K processor
KC8EA Programmers Panel
KL8E & KL8JA Serial Interfaces
RK8E Disk Control
2X RK05-8B Disk Drives
Mounted in standard DEC 4IL cabinet complete with power supply. In immaculate condition and highly recommended.
BRAND NEW TM11/TM10 magnetic tape station in standard DEC 6ft. cabinet.
Large stocks of equipment and spares
Call in at our showrooms or send for catalogue.

WE BUY COMPUTERS

of all kinds, including BCL, Burroughs, Friden Flexowriters, Kienzle, NCR, Nixdorf Olivetti, Philips, Singer, Logabax, etc., etc., etc., etc

EOB EQUIPMENT LTD.
BCM Box 678, London WC1V 6XX
01-404 5011

WANTED: OLD COMPUTERS

J. & M. COMPUTERS
47 High Road
Rayleigh, Essex
Rayleigh (0268) 742851

We have a variety of used computer and peripheral spares and we would like to purchase old ICL 1900 Systems. We will dismantle and collect from any site in the UK.

KODE SERVICES LIMITED

DATA PREPARATION EQUIPMENT

We have available Kode refurbished Keypunch Verifiers, single or dual coded to any keyboard layout or computer code(s). Options available include selective skip, character counters and tape to tape copy facilities.

We also supply Teletype 33 equipment for interface to the majority of computer systems. Overhaul, refurbish and maintenance quotations will be given for existing equipment after inspection by our engineers.

All our equipment is available for purchase, short or long term rental with full maintenance cover by our engineers based throughout the United Kingdom.

If you have a need for any of the services listed, a data preparation or terminal equipment requirement or perhaps a maintenance problem on your existing equipment, then please contact

KODE SERVICES LIMITED
Station Road, Calne, Wilts.
0249 813771 Ext. 23

FOR USED DP EQUIPMENT **BUY OR SELL THROUGH** WDP 01-464 9011

NEW DE LUXE 80 COLUMN PUNCHES WITH SKIP OR NON-SKIP OPTION
A/N KEY TOPS, CHIP TRAY, WRECK KNIFE, DUST COVER. MAINTENANCE AVAILABLE
FOLLOWING 1 YEAR GUARANTEE PERIOD

WDP 01-464 9011
WEBSTER D/P SERVICES LTD.
66 WIDMORE ROAD, BROMLEY
KENT BR1 3AX

KEY OPERATIONS ASSISTANCE LTD

CONTRACT

★ OPERATORS ★
★ PROGRAMMERS ★
★ PUNCH OPERATORS ★

LEADING SUPPLIERS OF CONTRACT OPERATIONS PERSONNEL THROUGHOUT EUROPE

SAVE TIME AND MONEY
CALL US FIRST

01-493 6696
01-499 1787

EUR/OPS EUR/OPS

4 HALF MOON STREET, LONDON W1Y 7RA

CoOperators A VLI COMPANY **supply first-rate contract operations staff for long or short term needs -FAST**

RING NOW 01.836 8411

IF YOU REQUIRE CONTRACT STAFF

Consult the specialists (since 1966)

OPERATORS
All levels up to Shift Leader (Data Prep staff as well)

PROGRAMMERS
All levels upto Senior Programmers

ANALYSTS
Up to Project Leader standard.

Personnel can be hired for ANY length of time.
Contracts are accepted on short notice.
Rates are based on experience of the person supplied.

Phone 01-439 6481 NOW
and speak to a top professional in an established company.
(24-hour Answering Service)

PS. Don't forget our PERMANENT RECRUITMENT SECTION for all operators, programmers, analysts, managers and sales personnel.

Licence No: SE(A)82

EFFECTIA GRAVIS

Personnel Consultants, 01-439 6481
National House, 66 Wardour Street, LONDON W1V 3HP

CDL for IBM DATA PREPARATION EQUIPMENT.

Brokerage service for used Computer and Peripheral Hardware

FOR ADVICE ON
BUYING-SELLING or MAINTENANCE

Call 02774 58028/9
Continental Data Ltd
2 Holly Court, Billericay, Essex

OPERATORS KPG PROGRAMMERS KPG KEY PUNCH OPERATORS KPG

SUPPORT SERVICES YOU KNOW YOU CAN RELY UPON

KPG Ltd 28 THE BUTTS BRENTFORD MIDDX 01-568 7345

The trade marks included in the schedule below were assigned on 1 June 1977 from P-E CONSULTING GROUP LIMITED of Park House, Egham, Surrey, to P-E CORPORATE STRATEGY LIMITED of Park House, aforesaid, WITHOUT THE GOODWILL OF THE BUSINESS IN WHICH THEY WERE THEN IN USE.

Mark	No	Class	Goods
HOCUS	953131	9	Electronic and magnetic tapes, and films prepared for exhibition; all for use in connection with computers and with data processing apparatus.
HOCUS	953132	16	Paper and paper articles, all included in Class 16; blank cards, instructional and teaching materials (other than apparatus); all for use in connection with computers and with data processing apparatus.

P-E CONSULTING GROUP LTD
PARK HOUSE, EGHAM, SURREY TW20 0HW TELEPHONE EGHAM 4411

FOCUS computer services limited

CONTRACT or PERMANENT—

ANALYSTS · PROGRAMMERS · OPERATORS
PUNCH OPERATORS · DATA CONTROLLERS

Tel. 01-487 5781 23A Devonshire Street · London · W1

HEXAGON computer services

...39-3671

145 WARDOUR STREET LONDON W1V 3T...

Contract & Perma...
Total DP Sup...
Programmin...
Data Prepara...
Data Control...

PEOPLE

Honours for Horner


Pountain

Philip


Orchard


Armitage

A CONFIGURATION management engineer with Redifon Flight Simulation, Robert Horner, has been elected deputy chairman of the Society of Licensed Aircraft Engineers and Technologists.

Horner, who is currently engaged on simulator projects for the RAF and USAF, spent 29 years in the RAF before joining Redifon. He reached the rank of Warrant Officer, and during his last five years in the service was involved with simulator procurement and maintenance.

In 1972 he won the Society's Gold Badge award for the best paper published in its official journal, Technair. He is a Fellow of the Society, and for six years has been a member of its council.

Bob Andrews has been promoted at Logabax from senior sales executive to manager of the Croydon branch office.

Jim Philip, previously general manager of Management Dynamics Software Services, has joined Data Logic as manager of the public sector division.

Adrian Smethurst, formerly head of management services at J. Bibby and Sons, joins Software Sciences as principal consultant for the industrial and commercial sector. John Pountain will be responsible for this sector as sales executive; he joins from Data Logic where he was also sales executive.

Lawrence Orchard has been appointed OP controller with TI Norfleet of Blackpool. Previously, he was researching into OP requirements for the company as sales office assistant.

Mike Armitage and **Derek Williams** become project managers with Systemsolve. Armitage was formerly area support manager with ICL, and Williams was DP manager at the Parker Pen Co.

John Bellamy has been made chairman and a director of Eurocom Data, the COM service bureau formed in 1974 by the National Westminster Bank and US Bancorp. Bellamy is senior executive in the related banking services division of Natwest.

Also appointed directors of Eurocom are **Ian Harman**, secretary and financial controller of the Eurocom group, and **Ken Jamieson**, senior manager of Eurocom Data. The three appointments result from the acquisition by Natwest of a 100% holding in Eurocom Data (Holdings) by buying all the shares held by US Bancorp.

Tom Wall, a founder of Memory Ireland and software manager of the group, has been appointed managing director of Memory Software Ltd.

Legs Eleven!

IT doesn't sound quite enough for soccer, even six-a-side, but it didn't stop this home team competing in the Univac Tournament and they even avoided winning the Losers' Plate (CAP got it). Out of sixteen teams of DP people from various companies, the champions were Dixon Photographic who won the football event from London Hospital, but an all-girl team from Univac had a victory in the Ladies' Competition.

CONFERENCES

ANYTIME interested to database management systems may register for the semiannual conference of the Australian System 2000 Users for Ireland Exchange (ASTUTE) which will be held at the Jack Tar Hotel, San Francisco, October 19-21. Besides techniques for System 2000 usage, applications in education, government and industry to be described. Further information from ASTUTE Secretary Stephanie Bowers, Sue Truchlood, Aberbach Associates Inc, P.O. Box 290, Germantown, Maryland 20767, tel. 301/253 5734.

WHAT should every manager know about information systems or databases? This is the question which a three-day international DP conference will try to answer. The conference, the title of which is Managers, Databases and Information Systems, is intended for managers and their staff and includes presentations by delegates from Belgium, Canada, Germany, the Netherlands and the UK. It has been organised by the IBI Applied Information Processing Group and will take place at the Meridien Hotel, Amsterdam on November 28-30. Those interested should contact IAG Services quarters, 40 Paulus Potterlaan, Amsterdam, the Netherlands, tel 020 45 35 26.

THE Texas Instruments technical seminar, Interface 77, which is based on the company's experience of product applications with its range of semiconductor devices, will take place in the Scandinavian capitals in September and in London on October 6 and 7 and October 6. Enquiries for the London seminar to Texas Instruments Ltd Seminar Centre MS36, Manton Lane, Bedford MK41 7PA, tel 0234 67466 ext 168; for Scandinavia to Texas Instruments Denmark, (02) 81 74 00; Norway, 03 84 60; Sweden, 08-23 54 80; Finland, 90-4644.

Call for papers

PAPERS are being solicited for the 6th annual conference on computer graphics and interactive techniques, Siggraph '79, to be held in Atlanta, Georgia, USA, August 23-25, 1978. Briefly, the conference topics for which papers are required are innovative applications of computer graphics as an aid to problem solving, design, analysis, or database management; research and development in algorithms, software, and interactive techniques; and new concepts in display hardware and related devices. Deadline for notice of intent to submit a paper or abstract of paper is December 2, 1977 and they should be sent to Professor Robert Phillips, Program Chairman, 223 Space Engineering Building, University of Michigan, Ann Arbor, Michigan 48109. For further details phone him on 313 764 7200.

SEPTEMBER 11-16
Stored program control of telephone switching systems — second vacation school, IEE, Colchester, Essex.

SEPTEMBER 12
Computer translation of Chinese scientific journals. Prof Shiu-Chang Loh. BCS Natural Language Translation Specialist Group. King's College, London WC2. 18.00.

SEPTEMBER 13-15
Experience and technology of database, Online, IEE, Savoy Place, London, WC2.

SEPTEMBER 14
Computers and privacy/joint meeting, Alan Lyon (Dr. Fisher chairman). BCS Leeds and Humberside branches, Royal Station Hotel, York. 18.30.
Display word processors, Roger Woolfe, BCS, Sussex branch. Imperial Hotel, Hove, 18.30.
LAMIS, BCS, Dundee branch, Queens Hotel, Dundee. 18.00.

SEPTEMBER 14-15
Meeting, IBM Computer Users' Association, Scottish Group. Esso Motor Hotel, Erskine.

SEPTEMBER 14-15
Society for Management Information Systems, annual conference, Dallas, USA. Details: SMIS, Suite 2026, 221 North LaSelle Street, Chicago, Ill 60601, USA.

SEPTEMBER 15
Vandalism, sabotage. It couldn't happen to us — the security aspects of operations, SCS Operations Group, Polytechnic of Central London 18.00.
Computers and people. G. A. Fisher, BCS, Guildford branch, Civic Hall, Guildford, Surrey. 19.30.
The proposed traffic control system for Norwich. Dr A. J. R. Rawley, IEETE, Assembly House, Theatre Street, Norwich, 19.30.

SEPTEMBER 19-22
Applications of numerical software conference. Institute of Mathematics and its Applications, Southend. University of Sussex, Brighton.

SEPTEMBER 18-24
SAMA 77, Salon International de la Production Automatisée, SAMA International, Berne, Switzerland.

SEPTEMBER 26-28
Distributed computer control systems — international conference. IEE. Birmingham.

SEPTEMBER 27-30
Annual conference. Operation Research Society. The Queen's and Magdalen Colleges, University of Oxford.

SEPTEMBER 28
Computer access to large databases using alternative store technologies. Ken Groves, Peter Waterworth, Roy Brierley. BCS Information Retrieval Specialist Group, City University, London. 14.00. Tickets £1 from Pauline Wellars, at the BCS, tel: 01-637 0471.
The protection of data by cryptography, seminar, NCC/NPL, Cumberland

OP SPOT

. . . this week looks at the professional operator — 'a DPM's best friend.'

THE operator has in his power the ability to make or break the smooth running of an installation. Often we hear of operators who are reputed to be little more than button-pushers, unable or unwilling to make decisions, and contributing nothing to improve the workflow of the installation.

How little we hear of the good operator, the professional operator. For a career-minded operator is a professional. He acknowledges his responsibility to his employer, and takes an interest in everything he does, and all that surrounds him.

He understands the systems, and how to utilise expertly the installation resources. He will know fully the intricacies of the operating system, and how to manipulate it to meet present demands.

A professional operator is worth his weight in gold — but will be very lucky if he gets it. He will be appreciated by all ranks in the installation, who will be only too pleased to give him as much help and assistance as he requires.

Other operators, possessing some of the bad' habits which proliferate in the average installation, will criticise him at every opportunity. He stands out from the bunch. He has seized every opportunity given to him, while others have failed, and been happy to assume the attitude of "It's not my job", or "I'm not paid enough to do that".

Raw recruits to the operations team will benefit from his knowledge. Providing they are willing and able to learn, and that his approach is right, they will be moulded into his ways.

What a great asset these people are to any installation.

A professional operator makes operating his career. He has no desire to proceed to the ranks of programmers. To him, they are his equals. Each complements the other, for without one, the other cannot exist.

The professional operator thrives on work, he likes an active mind, and is unhappy when idle. He tolerates the operating system, which he has learnt to master, but deep down he resents its intrusion into his machine.

How does one cultivate a professional operator? Well, a good basis is an interested DPM, keen to give his operators as much assistance as they require, positive encouragement to become involved in a development project, constructive criticism of user and other computer sections alike, and an attitude to operators which acknowledges that they are a vital part of the team.

Positive encouragement of an operator pays dividends. Training courses abound, and a DPM who organises courses without the need for prompting by the operator is definitely on the road to success. He views his operations team as people, not as employees.

In much the same way as a dog is reputed to be man's best friend, a DPM's best friend could well be his professional operator(s).

Boom in business for service firms

UK service companies' business with government funded organisations in the first quarter of this year increased by 20% over the last quarter of 1976, though the total increase in business to all customers was only 4%.

But the increase in total business between the first quarter of 1976 and the first quarter of this year was 20%, well ahead of the inflation rate over that period.

The statistics, compiled by the government's Business Statistics Office as part of its Business Monitor service, show that the total business in the first quarter was £62.5 million. The biggest money earners were custom built programs run by bureaux, with £10.3 million, system implementation with £9.5 million, package programs run by bureaux with £8.7 million and bureau time hire with £7.3 million.

Batch processing still rules the bureau business. It accounted for £21 million of sales out of the total bureau sales of £32.3 million.

Total business with government funded organisations was £9 million. Nearly £19 million worth of business came from service companies' parent organisations or from in-house use. Foreign business rose marginally to £3.1 million.

The figures show that the number of full time staff in the services industry fell by 474 in the first quarter to 19,670. Programmers and analysts accounted for 5,765, operations staff for 3,225 and data preparation staff for 2,937.

EPIC system is launched

PRICES and other details about Stock Exchange securities can now be provided for the securities industry and the media by the Stock Exchange and Extel under a service jointly announced by them. This is based on the EPIC, Exchange Price Information Computer, system.

EPIC is run on two Digital Equipment PDP-11/70 systems at the Stock Exchange. Security prices are input from terminals on the market floor by a specialist price collection team, and this information is augmented by and merged with related information such as Stock Exchange announcements and extracts from Extel's own existing database, Focus.

It includes share information on 15,000 UK and overseas companies and is maintained in batch mode on Extel's own 370/135.

The SE will concentrate on selling EPIC services to the securities industry, while Extel will sell EPIC information to the Press and other media.

Earlier this year Extel signed an agreement with the US based bureau, the Interactive Data Corp, to supply the latter with Exstat, a database of financial information on more than 2,000 UK, Continental and Australian companies (CW, May 26).

Personal computing group

A NEW Special Interest Group on Personal Computing (SIGPC) has been set up by the Association for Computing Machinery.

The group will be operated exclusively for educational and scientific purposes in the design and application of computer systems for personal uses. These include systems for home, clerical, small business, management and recreational applications, with a bias towards the technology of these systems in hardware and software. In particular, this will cover the use of such tools as graphics, speech, data management and music systems.

Dr Portia Isaacson has been appointed the first chairperson, and plans are now in hand for the group's first business meeting at ACM '77, in Seattle next month.

Further information about SIGPC can be obtained from the Association for Computing Machinery, PO Box 12105, Church Street Station, New York 10249.

SEL recovers

A SUBSTANTIAL increase in turnover and a return to healthy profitability are shown in results from Systems Engineering Laboratories for its 1977 fiscal year ended June 24. The Fort Lauderdale, Florida, manufacturer of 32-bit minicomputers, reported a 1977 turnover of $30,774,000 compared with $20,003,000 in 1976 and net profits of $1,630,000 compared with a net loss of $7,000 in 1976.

Water system

AN Intertel network control system, together with MCS 4800 modems, is to be supplied to the Anglian Water Authority by Raytheon Computer Data Systems. The equipment will link a dual Honeywell 66/10 computer at the Huntingdon Computer Centre with 26 remote locations. The main applications will be direct billing, administrative, financial, scientific and technical services.

Micro-based timer launched for domestic cookers

ALTHOUGH the domestic computer itself may still be a thing of the future, the scope of domestic computing continues to grow, with the announcement last week of a microprocessor-based timer for domestic cookers by Diamond H Controls.

Based on a chip from the Rockwell PPS-4 family, the timer offers the ability to set a cooking time that can start immediately and last anything up to nine hours 55 minutes.

Alternatively, a similar cooking period can be programmed to start at any time up to 23 hours 55 minutes into the future.

It comes equipped with an LED digital display and a program state display, and is designed for compatibility with push button, micro-switch or touch panel switching. Time periods programmed into the unit can be recalled to the display, and the cooking period can be made to start immediately, or cancelled.

Pelican system hits snags

A £37,000 scheme for six Pelican crossings at Seven Dials intersection in Brighton, will eventually be controlled by a microprocessor-based master timing system being developed by Plessey Controls.

The crossings were installed by Brighton Council last week. The Plessey system was scheduled to be installed at the same time, but there have been several technical problems with the prototype, and it is understood that the system has been delayed by up to four months.

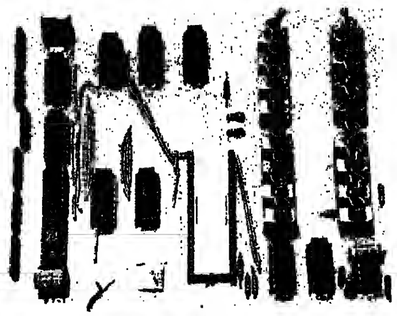
Valued at £11,624, the operational system will be based on a Mark Two-version of a Master Timer "Cableless" Linking Unit.

The microprocessor will operate in a mains synchronisation mode to provide the timing and co-ordination of the six Pelicans. The aim is to provide sequential control of traffic passing through the intersection while at the same time protecting the passage of pedestrians.

£250,000 contract

PRODUCTION control and spare parts order processing are to be run on a Burrougha B1720 by Priestman Brothers, a manufacturer of cranes and excavators in Hull. Both hardware and software is being supplied by Burroughs in a contract worth more than £250,000.

Scrumpi kit for hands-on experience



Scrumpi — hands-on development system.

AN inexpensive and basic method of gaining first hand knowledge of microprocessor operations has been introduced by Bywood Electronics. Based on the National Semiconductor SC/MP 8-bit device, it is a £55 development system kit that has been christened Scrumpi.

In Scrumpi, the states of the 12 address lines and the eight data lines are displayed in binary form on LEDs. Each of the data lines can be taken to ground by programming switches. Memory in the system consists of two 256 by 4 bit devices, providing 256 words of read / write memory. Two four-bit latches act as an eight-bit I/O port in which each set of four can be wired as either inputs or outputs, enabled by the highest address line.

The various functions of the kit are controlled by a flip-flop, a type 555 timer and NAND gates. The functions, including Rest, Slow, Step, Run/Halt, Protect, Sense-A, Sense-B and Load, are selected by eight toggle switches.

Scrumpi's memory is programmed by a form of direct memory access which automatically stops the microprocessor during each instruction cycle. All the instructions consist of at least one read cycle — Instruction Fetch — which gets the op-code from memory.

Programming is by stepping or running the microprocessor to the required address, putting the eight data switches to the required binary value, and then operating the load switch.

The system has facilities for a simple interface for either four-bits in and four-bits out, eight-bits in and out. It can also be interfaced with simple VDUs.

A single 12 volt power supply, together with a 5 volt Zener diode, is sufficient to provide the +5 and —7 volt power requirements, and the kit comes complete with all necessary sockets, and documentation.

MICROPROCESSOR NEWS

Intel to stay down market, says Moore

THE beginnings of a split between microprocessor manufacturers as to what constitutes the right market to be in came to light last week when Gordon Moore, president of Intel, stopped over in London during his European tour.

While some manufacturers are keen to enter the market with devices that offer the architectures and operating capabilities of minicomputers, aiming at the top end of the marketplace, Intel is content to let them. According to Moore, Intel is intent upon establishing a firm base in the lower end of the market, where there are a greater number of applications areas to be approached. From this firm base of applications expertise, the company feels that it can then move upwards into the more sophisticated areas of "mini" replacement.

Although Moore, as a semiconductor man, is untypically reticent about his company's activities, it seems clear that the microprocessor, as he understands it, is by ancestry a semiconductor device, and its production is therefore governed by the same "laws".

These laws state, in essence, that production volume is the staff of life, and that, therefore, those markets which can produce the volume orders to support the production process are the ones to tackle.

This does not mean, however, that Intel is ignoring the potential at the top end of the market. Many of its customers in the US are now seriously discussing systems based on multiprogrammed, multiprocessor configurations. Moore pointed to the recently introduced RMX-80 resource sharing executive software (CW, August 25) as an indicator of the way the company views its pattern of growth into such markets. This software runs resident on most 8080-based configurations to extend significantly the capabilities of this standard device.

It is also probable that the oft-talked of 8086 16-bit microcomputer, according to Moore still several months from any official launch date, will add to Intel's capability to deal with the top end of the market.

A chemist by training, Moore was happier to talk about process technologies and related developments. The recent cross-licence agreements with Philips, for example, gives Intel the legal right to use the Philips patented Locos, Local Oxidation of Silicon, process. This greatly improves the capacity of the basic MOS process to cope with the increased component densities per chip required for VLSI devices, and will help Intel to achieve the industry's overall expectations of one million components per chip by 1980.

Moore admitted that the Philips agreement was, in fact, one of the tidier deals that had been struck in this area, for Intel was already using the Locos technology in its processing and was able to avoid making royalty payments by providing Philips with a needed alternative — the right to produce a second source 8048 microcomputer.

When asked about the use of VMOS technology (CW, July 21), Moore could view it only as one more feature of the total MOS process. "It greatly increases the complexity of the process technology", he said, "and is not worth the trade-off except in certain applications, such as high density ROMs and some drivers."

Of Intel's own development efforts, some of its more recent work has been directed towards Improved memories. With RAMs, the company is moving using an improved MOS process known as HMOS, high performance MOS. This is basically a "shrink" approach, where the masks for a device are reduced in dimension usually by about 30 per cent. This has the effect of reducing the access times of memories while also reducing the amount of silicon consumed in their manufacture.

Several new memory products are in the pipeline that use the HMOS technique, with one of the earliest being the 2107, a RAM.

Two versions of this 64K memory are now available, offering either 70 nanosecond or 55 nanosecond maximum access times.

Artificial arm that can mimic the human one

A MICRO-BASED artificial arm that can mimic 11 of the range of 27 movements of the human arm has been developed under a joint project by the Japanese Science and Technology Agency, and Health and Welfare Ministry.

The microprocessor receives commands via a throat microphone and an audio recognition unit, calling on stored movement program. Indicates the degree of rotation and speed to each of 11 DC minicomputers in the arm for movement.

There are three motors at the shoulder, one at the elbow, two at the wrist, and five at the fingers. Carbon-fibre plastic is used for the majority of gears, and the frame, which has reduced the total weight to about 1.6 kilograms.

In tests, the arm is said to have simulated almost every natural motion, and with the introduction of the microprocessor, the previous heavy fingertip pressure sensors have been replaced with small, lightweight ones.

The arm can be divided into upper or lower arm for separate use, depending on the particular level of disability.

Power will be supplied by a portable nickel-cadmium battery.

EXORprint

MOTOROLA Microsystems have produced an impact printer specifically for users of the M6800-based EXORciser and Micromodule microcomputer systems who require a printout of programs and data.

Called the EXORprint printer produces 80-character line at a maximum rate of 110 characters per second.

To reduce vibration and noise the print is moved at a maximum rate, while an optoelectronic sensing system is used to control the positioning of each character on the page.

Microcomputer in a book...

ONE way of ensuring that newcomers to microprocessing get hands-on experience while reading their course material, is to put the hardware in the book.

This is the solution produced by Iasis Inc, of West Mauda Avenue, Sunnyvale, California, US.

The IA7301 "Computer in a Book" offers a systematic course in simple programming, with the software backed up by the inclusion of an Intel 8008-based microcomputer board in a three-ring folder.

The documentation is designed to provide step-by-step instructions in programming that simple but complete programs can be produced. The hardware can accept 8-bit instructions, and includes a 24-pad keyboard, up to 2K bytes of PROM, and 64 bytes of RAM for program and data storage.

FILE DESIGN Part 11: Update handling

By Owen Hanson

RUN times can be markedly affected by the way in which files are updated. The options open to the systems designer depend on the organisation of the file.

Direct files

Each access to a file organised directly involves transformation of the record key into an address, seeking the record stored at that address and checking whether it is the desired record. If it is, the search is complete. If not, the record is stored as a synonym, and will be located in a way that depends on the synonym handling technique used when the file was set up.

Each update is processed separately, and there is only one way of cutting run times. This is to ensure that most updates are of home records, as this avoids extended searches for synonyms.

Sequential files

If every record is to be updated, there is little waste of time. Usually a relatively low proportion of the records will be accessed; in this case many records that are not required are read into the central processor. Any method of avoiding or reducing this will save time.

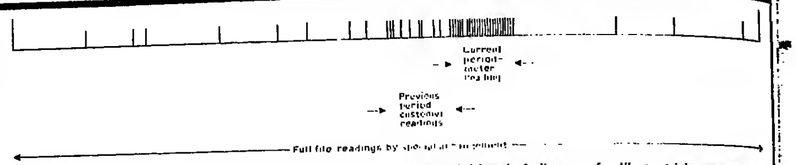
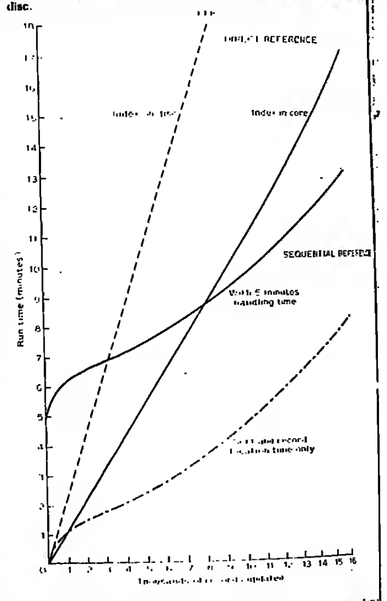


Figure 1 (above): A diagram of a file containing customer records, consisting of quarterly meter readings. Absent bill the readings are taken by readers as scheduled, others are read by customers, or by readers on arranged dates, or are estimated readings.

Figure 2 (below): This graph shows the relationship between the number of records to be updated and the run times for direct and batched sequential updating of an indexed sequential file on a 3330 disc.



Some sequential files on disc can be skip-sequentially processed, depending on the format of the data records, as described in Part 9. These files can be updated without taking any special precautions, and will not become highly I/O bound unless the processing involved is trivial.

Those sequential disc files that cannot be skip-processed, and all tape files, are a different case. If updates occur unpredictably, or if every part of the file is equally likely to be updated, the file designer has to accept a high degree of I/O bound operation while unwanted records are read. Sometimes, however, updates are grouped. In this case it may be possible to reduce run times considerably.

The aim of the designer is to handle parts of the file with a high update frequency separately from those parts that are relatively inactive.

A public utility file might be updated as shown in Figure 1. If customers are billed quarterly, meter readers will read a thirteenth of the customers' meters each week. Appropriate customer numbers can ensure that these records are held in a group, one thirteenth of the file.

In any given week, the meters read will provide a high density of updates in the corresponding group of records. The previous group will yield a fair number of updates read by customers, as the meter reader could not gain entry when he called. The rest of the file will have only a few updates, representing readings by appointment at convenient times.

The designer could arrange for daily updates of the whole file. This would lead to an I/O bound run for much of the file, and (probably) a process-bound run while updating the current group. An alternative is to update the current group every day, but to update the whole file only once a week. At the same time, this week's "current" group would be recombined with the main file, and next week's would be extracted.

This method has the double advantage of cutting tape (or disc) passing time, while increasing the activity of the non-current parts of the file, so improving the balance of the run between I/O and processing. An example of this method is:

A company has 1,300,000 customer records, each of 200 characters; 100,000 customers are billed each week. The file is held on magnetic tape with the following characteristics: Transfer rate 180K chps; Inter-block gap 0.6 inches; Start/stop time 5 milliseconds; Recording density 1,800 characters per inch; Records blocked in 25s.

The main file will take up 52,000 blocks. It will require

$$\left|\frac{1,300,000 \times 200}{1,600}\right| + 52,000 \times 0.6$$

inches of tape, or 18,142 feet.

This will mean that the file will be held on seven 24,000 foot reels of tape. If the whole file is processed every day, tape passing time will be

$$5 \times \left|\frac{(1,300,000 \times 200)}{180,000}\right| + 52,000 \times 0.005$$

seconds = 2 hrs 37 mins a week.

There will also be considerable tape handling time with seven reels.

If the current part of the file is updated on the first four days, and the main file only on the fifth, tape passing time will be

4 × (100,000 × 200/180,000
+ 4000 × .005),
+ 2 hrs 37 mins / 5
= 41 mins 5 secs per week.

Sectioning a file of this size will thus save almost two hours of tape passing time per week, and a fair bit of reel handling time. The technique should always be considered where a sequential run is I/O bound.

Indexed sequential files

The temptation here is to use the direct facility of the file, and process updates as they arise. This certainly minimises the service time for an individual update, and it may often be the right way to use the file. However, unless the number of updates is quite small it is more efficient to batch and sort them before input rather than to handle them in a random order.

Figure 2 shows the time required to access records on an IBM 3330 disc pack directly and sequentially. Timings have been calculated on the following basis:

Direct figures are given for, 1. The cylinder index held in main storage. 2. The cylinder index held on disc. It is assumed that the file takes up a complete pack, so average head movement times apply.

Sequential figures allow, 1. A five minute handling time for the sort in addition to the sort timing itself. 2. Sort timing without handling additions.

From the figures it appears that, depending on the handling involved and the position of the file indices, up to a few thousand updates can be handled better by direct access than batching and sorting. Beyond this it is always better to batch input, and if handling times can be reduced the figure drops to a few hundred or so.

PRIVACY DEBATE

The need to discuss the real issues

By Joe Kenny

Privacy is not based simply upon controlling access to data, be it stored either by manual or computer techniques. So says Joe Kenny.

In this contribution to the Privacy Debate, Kenny slays many of the myths surrounding the debate and asks us to avoid confusing "privacy" with "security" as he believes that these two issues are not necessarily mutually exclusive.

He points out that unless there is mature and reasoned discussion, then the DP community will not only do a disservice to itself but also to society as a whole.

Kenny is chairman of ADS Software Ltd and has been in data processing since 1956. He has worked for ICT and Honeywell and has had wide experience on the Continent and of security. He is also chairman of the BCS privacy and public welfare committee.

WE live in a world of diminishing physical resources. The demand made on these resources is such that they need to be utilised in the most effective manner possible.

One resource of which it is probably true to say has as yet not realised more than a small proportion of its full potential is the mind of Man.

Computer technology — and the techniques based upon that technology — offer to society as a whole and to the individual members of society a possible way to manage and guide a potentially overwhelming situation.

How fast is technologically driven change appearing in our society? A recent report of a workshop last autumn contained comments on anticipated advances in computer architecture and semiconductor technology.

In considering logic circuitry it is stated that speed-power ratios have been increasing by a factor of 10 every four years and a similar improvement appears likely in the next four years.

New and innovative uses for such technology must appear when the processing power of some of today's largest CPUs can be fabricated on a £5 chip.

All organisation is dependent upon data and information derived from data. The data involved will exist in the form of structured files, however you choose to interpret that expression; what wonderful opportunities must exist to use technology to take us to a new world, or am I being emotional?

One may say, however, that all this data appearing in structured files can be a major benefit to society as a whole and to its individual members.

Inevitably the word "however" must appear. Should we not ensure that this data resource which is being used to our benefit cannot also be used to our harm?

Privacy of information is one aspect of privacy as a whole; privacy of the person and privacy of property may also exist. Privacy and computers is a subject concerned with the use of data in our society in a technological environment.

It should not be confused with some of its components such as confidentiality, data integrity, data relevancy and the need for data security as an element in security and computing systems.

Technology in its more advanced forms brings a new dimension to human activity. Computer technology related to the collection, storage, processing and dissemination of data and information derived from data is such a dimension.

The need for guidance and controls in the use of a technology is a positive and necessary step to ensure that the full benefits of a technology may be realised.

It is for this fundamental reason that the BCS as long ago as March 1971 was advocating the need for legislation to control and guide the emerging data resource.

Analogies may be stated to support a point of principle, even though exact analogies to situations are rare. The Civil Aviation Authority (CAA) came into existence to guide a technology which deals with the physical carriage of people.

It would be difficult to convince anyone that Concorde and horse drawn carriage need to be controlled in a similar manner, even if both are capable of transporting people.

It is the correlation of structured files and the possibilities that can arise from such an activity that provided the stimulus from which action developed on the subject of privacy and computers.

The interest of an individual in information about him goes beyond the original access of another person to any particular fact to questions of whether the information is further disseminated to third and fourth parties and to the public at large.

This also brings in the point that information about an individual may not be generated by him but by others.

Information systems based upon computing technology enables data about individuals to be stored, retrieved and passed to others without the consent or knowledge of the subject. Their mistakes may be compounded and the effects of mistakes exacerbated.

Above all the real major characteristic which should concern everyone is the ability of a computer system to take disparate items of data and search, centralise, correlate and reorganise these data in possibly damaging ways.

In isolation each item of data may not be sensitive and protection may seem unnecessary; it is the planned correlation of data on a structured basis which adds a completely new dimension.

Privacy questions are brought into play and are intensified as the number of files on individuals grows in an ever widening variety of fields.

Could I suggest that computers should be regarded as knights in shining armour — of whatever political colour — which could give the United Kingdom the possibility of developing our economic, political and social order so that the paradise beloved of politicians may be realised to some small extent. If so — then legislation may be necessary to give conscious social decisions as to the use of data in computing systems.

Having commented on the philosophical basis I propose to comment on some of the apparent issues now being debated.

I must, in so doing, make my usual plea of many years' standing that the subject of privacy and computers is complex. In both its legal and technical aspects and in depth reading and study is required before this fact becomes realised.

In no way is it proposed by me that consideration should not be given to non-computer based privacy needs. It is proposed, however, that computers are unique in the situation they create.

Legislative needs in different countries vary widely on this subject. Sometimes an existing legal situation requires amendment or modification before privacy as a whole can be tackled.

Consider the situation over Breach of Confidence in the UK and the thoughts being given to the need for amendments to the Official Secrets Act.

Some countries have a combination of state and federal legislation; think of the United States and West Germany. The Napoleonic Code and Anglo-Saxon legal principles may have the same ethical basis but the implementation paths chosen to achieve ethical objectives can be very different. The movement for Freedom of Information should also be taken into account in deciding privacy objectives.

Privacy is not based upon simply controlling access to data be it stored either by manual or computer techniques. In looking at the effect of computer technology on data is it not reasonable to continue to press the point that the situation has been a new one for many years and that the different potential between manual and computer based storage and processing continues to develop? Could we please get away from superficial and often irrelevant comment?

I cannot understand how privacy and security are so frequently equated. Some of the founding fathers of the subject of privacy and computers dealt with this many years ago, I refer specifically to the writings of Dr Willis Ware, a current member of the privacy commission in the US.

I would hope that the views of an accepted authority would merit consideration at least from organisations whose roots are in the US.

The safeguards of computer security cannot control unauthorised behaviour of the authorised user; this is an aspect of privacy safeguards.

Access controls to data are required, at this level it may reasonably be argued that computer based and manual based systems have something in common. In discussing privacy we are looking at an entirely different level.

On the important subject of the cost of privacy legislation and compliance it is impossible to arrive at any consensus. I have looked at arguments giving any additional costs to the DP user as being less than one per cent to over 100 per cent.

A common opinion has been expressed in the UK that high costs are associated with the need for a computer user to interface directly with the public, this view is one of the reasons behind the argument for a licensing authority.

Another argument is that such an authority could perform a permissive role and not merely a restrictive role.

It has also been said that costs are really concerned with access control and not privacy and that the efficient user need have no fears on the subject of costs.

Be that as it may, the privacy question has reached a point of no return on an international basis. As EEC members we are directly affected by the actions of other members and the views of the EEC Commission.

The subject of privacy and computing requires matured and reasoned discussion. We should all participate in it. Let us raise it to the right level by studying as much of the existing background material as we can obtain.

As BCS members we must look at the situation from our individual position and our position in the computer industry.

We must also recognise that we are members of a larger society and that we will be doing ourselves a disservice if we do not recognise this fact and arrive at mature, far-seeking conclusions. Your assistance is sought, but please make it in formed and not emotional.

References.

Privacy and Computers — Canadian Departments of Communications and Justice: Records, Computers and the Rights of Citizens — US Department of Health, Education & Welfare; Privacy — The Private Sector and Society's Needs — Willis H. Ware; Privacy — Mervyn Jones; Emerging Data Protection in Europe — F. W. Hondius; Privacy, Security and Computers — O. E. Dial and E. M. Goldberg; Privacy and Computers — Paul Sieghart; Report of Data Protection Commissioner — State of Hesse; Le Secret des Fichiers — Francoise Gollonedec-Genuys.

DOWNTIME SPECIAL

'Fine fellow, Dr Hackenbush... taught me everything I know about computers'

The quiet, orderly world of computers and the anerchic, peripatetic explosion of wit that was Groucho Marx seem at first sight to have little in common. This interview by Hector Arce, which appeared in the US journal Computer Decisions shortly before his death, reveals the great man's unique understanding of DP matters. Chad salutes the memory of Man'a enswar to the machine... Julius "Groucho" Marx.

I didn't know you were an authority on computers, Groucho.
It'a Mister Marx. Do I call you Groucho?
I beg your pardon, Mister Marx. But if you're an authority on computers, maybe I'd better call you Doctor Marx.
In that case, you can call me Doctor Hackenbush... Fine fellow, Doctor Hackenbush... taught ma everything I know about computers.
That's why you want to be called by his name. But wasn't he a horse doctor?
He had a slight tickle in his throat. That's all. But it didn't affect his singing voice.
Come on, Grouch. Dr. Hackenbush was a character you played in A Day at the Races. He didn't have anything to do with computers.
They usa computers at the reces. You should have known my brother Chico. If they ever wrote a book about him, they'd call it A Life at the Races. And he was the greatest human computer I ever met.
Really?
He could look at a a dollar bill. Ten years later, he could tell you tha aerial number frontwards and backwards and inside out.

Groucho and "the greatest human computer t ever met" spend t day the races...

He could do mathematics in his mind. He knew the phone number of every bookie in the country, and he could memorise tha numbers whenever the bookies changed tham... which was once a week.
That's interestiog. He must hava used that talent a lot.
He sure did. Ha died broke.
But ha did have quita a mind for figures.
He had a mind for figures, all right.
A great womaniser?
Yeah, and those figurea he never could kaep straight. Harpo didn't get married until he waa almost 50. Without thair make-up, he and Chico looked a lot alike, Chico alwaya told his first wife Betty that all thoae tomatoes that kept coming up to him thought he was Harpo. One time, Chico and Betty were on an alevator at the Waldorf. This great-looking woman got on. She lookad at Chico and tweaked him on the cheek. She said, "Hello Chicky-Wicky." Then she got off the elevator. There waa a long silence. Then Betty said, "All right, you rat, try and tell me she thinka you're Harpo." That broke Chico up, and he couldn't atop laughing. Soon Betty waa laughing too. That laugh saved his marriage... for at least 10 years. Then another time they were at the theatre. This time a blonde waved at Chico. She was across tha aisle. He turned to Betty: "Who's that?" Betty said, "That's the woman that almost broke up our home two weeks ago."
Maybe ha could have used a computer to keep those figures straight.
He could have used a computer to remember his lines. Sometimes, before each take, he'd be spouting all the odds on races from Caliente to Hialeah. Then we'd do a scene, and he'd blow up. He could never remember his lines. That's some accomplishment. Usually, all he had to say was, "That's-a-nice, boss."
Chico was a great card player, one of tha greatest. How would a computer have done against him at a card table?
What game? Chico was lousy at poker. Like our mother Minnie. She olways drew to an inside straight.
What about bridge?
She worc one, but it was so naturnl looking.
I mean Chico ploying bridge against a computer.
It all depends. Is the Computer South and Chicu West? I'll tell you, around Chico, there waa no finesse. That's a bridge joke. Do engineera know bridge jokes... aside from the one about the Brooklyn Bridge? But Chico was a great bridge player. So was Harpo. He played dummy.
I understand they onca played Ely Culbertson and his wife.
Chico played Ely Culbertson. Margaret Dumont played his wife. And Harpo played the harp. That's how he got his name.
Back to computers, Groucho. Do you like computers?
I'm like Will Rogers. I nevar met a computer I didn't like.
Have you evar seen a computer?
No. That's why I can aay I never mat a computer I didn't like.
Do you have any stock in ony companies that make computers? IBM —
(Singing) IBM as long oa I hava you.
Should I repeat the question?
Let me ask you a question. What is this fixation on computers? it's not healthy for a man your age.
I'm talking to you about computers because you're the so-called expert.
Then it's not healthy for a man of my age. Nothing is healthy for a man my age. Let's change the subject.
We could talk about movies. I read recently Julie Christie is making a movie in which she makes love to a computer.
Yeah, I know all about that. You could say I started the trend.
How do you figure that one?
All of my wives told me that when it came to romance, I was very mechanical.
That's pretty funny.
Thnt's what you think.
But do you think they could program a computer so that it could tell a joke?
They've already done it. There's a machine with a memory bank of 10,000 jokes.
I've never heard of it.
It's called Milton Berle.
I guess I walked into that one.
You've been around me long enough. You should know that now. You have to get up pretty early if you want to get out-bed.
Back to computers. Would you have me in your home?
I don't see why not. I've got Milton Berle in my home.
Would you have a robot in your home?
I told you. I had Milton Berle. Keep that up and he's going to demand equal time. What would you do with an actual robot, one made of metal, with push buttons and arms and legs and all that sort of thing?
We could always talk.
What would you talk about?
About 20 minutes.
What about computer dating? That used to be very popular in the sixties.
I was very popular in the sixties too.
Have you ever gone on a computer date — where you're match you up with a person of similar interests?
Why should I? Who wants to go out with an 88-year-old man who has a moustache and smokes cigars?
What about computer dating for other people?
What is it they say these days? — do your thing? It doesn't appeal to me what they do. One thing I can tell you. When it comes to girls, no computer is going to have that gleam in your eye.
You've been a reader all your life, Groucho. The more you read, the more curiously you're bound to have the question only a computer can answer?
I don't know. I don't have machines. I just go to the Dictaphone once in a while and write down. So did my secretary. I don't build them like they used to.
Surely you made final decisions for computers?
Don't forget, I was controlled by man.

● Continued on page 17


Birmingham . . . . installation of the more powerful multi-terminal IBM System 34 is a likely medium term development.

Data-Link bureau offers new Systems 32 service

BECAUSE of IBM'a long term policy of converting most of ita batch bureau business to teleprocessing the independent Croydon bureau, Data-Link, is to install an IBM System 32 to provide smaller batch IBM customers with RJE facilities without the expense of installing their own terminal kit.

The System 32 at Data-Link will be linked to IBM's Croydon data centra and will also be used to provide Data-Link customers with local data processing services. This is part of a long term plan by Data-Link to add general DP to the data preparation service it has offered since 1969.

Data-Link managing director Derek Birmingham (pictured left) said that Data-Link is negotiating a contract with IBM Croydon enabling it to provide the RJE service and points out that separate contracts will be signed between Data-Link and individual customers opting for the service.

The local processing of customers' work on tha System 32 at Data-Link itself will be based on IBM's DMAS, Distribution Management Accounting System.

Data-Link has modified this so that files from batchea of diakettea can be held on and accessed from the Syatem 32'a 13 Megabyte fixed disc.

Thia avoids having to load diskettes one at a time as different files are required.

At the same time Data-Link haa hired three IBM oriented software housea — Templa of Gravesend, Kent; EPG of Sevenoaks, Kent; and March Computer Services of Ilford, Essex — to write additional applications software.

Apart from general accounting joba more specialised packages include a vehicle profitability reporting suite aimed at transport firma like coach operators and a production control suite.

Derek Birmingham said that Data-Link now plans to concentrata on building up the data processing aide of ita business and the inatallation of the more powerful multi-terminal IBM System 34 is a likely medium term development.

Tha growth of the data preparation aide of Data-Link'a business is now being levelled off. It currently involves about 50 staff and equipment includea 12 IBM 3740 key-to-diskette stationa as well aa punched card kit. Most of Data-Link's clients are located in the City of London or south of the Thames.

DP buyers' conference

A TWO-DAY conference for first time computer buyers is being run by the Data Processing Management Association. Called computerisation: an objective outlook, the conference will show potential users how to choose, finance and run a computer and computer department.

It will also take in topics like aecurity, service bureaux, atandby and maintenance. It will even evaluate whether a computer should be installed in the first place.

Speakers will include David Firnberg, director of the National Computing Centre and Tony Hardcastle, DPMA president.

The conference will be held on October 25 and 26 at tha Institute of Marine Engineers, London. The fee is £124.20, which includes lunches and documentation. Further detalls from the organiser Lenorfern Ltd, Lorton House, 5 Ludgate Circus Buildinga, London EC4M 7LH. Tel: 01-248 5892.

Bureau takeover

THE Bristol-based computer output microfilm bureau business of microfilm specialists, Micromedia Ltd, has been taken over by Microgen of Watford.

Intel micro development centre

A NEW microcomputer development centre, introduced by Intel, incorporatee all necessary hardware and software to carry out microcomputer aoftware development.

Designated tha Intellec 888, the system comprises an MDS 800 davelopment system equipped with 64K of RAM, a dual drive floppy disc system providing up to 2M bytes of bulk atorage and an Intel video display unit.

The software provided includes the PL/M resident high level compiler, a relocating macro assembler, linkar, library manager, implementation supervisor and diskette operating system.

Scicon service

THOSE wishing to access the institution of Chemical Engineera' database on the physical properties of over 400 compounda can now make use of Scicon's Physical Property Data Service. Uaers can althar install their own terminal and link Scicon'a dual Univac 1108 installation at Milton Kaynes, or use terminals installed in Scicon's UK offices.

Ulster Threshold scheme 'open to all'

A THRESHOLD training scheme is being organised in Northern Ireland by the National Computing Centre and supported by the Northern Ireland Manpower Services Commission.

But whereas in Britain the scheme is designed for unemployed school leavers the Northern Ireland scheme is open to people of all ages.

"It's running as a kind of joint Threshold and TOPS scheme," said George Penney, organiser of the Threshold scheme at the NCC. "I've interviewed 20- and 30-year-olds and even a couple of 52-year-olds."

Penney said that the applicants had performed twice as well as British applicants in tests, although this may have been accounted for by their ages. "Nevertheless it shows the talent which is going to waste in unemployment there," he said.

The Threshold scheme, launched last year (CW, November 25, 1976) combines classroom learning with on-the-job experience over courses lasting 40 weeks. In the first year 220 students took part.

Three courses have finished and virtually all 70 students on them have found jobs as operators or programmers. Penney said some had not needed to complete the course as they had been given permanent jobs during their periods at installations.

Another 500 students will join courses this year. The government has approved support totalling £850,000. Demand for the courses is high.

On Merseyside, for example, there have been 350 applicants for 40 places, whereas last year there were 100 applicants.

Sales up 45%

THE software house Pansophic had a 45% increase in business in its last financial year which ended on April 30. The company, now in its ninth year, had sales of $7.2 million (£4,140,000).

DOWNTIME SPECIAL

● From Page 16

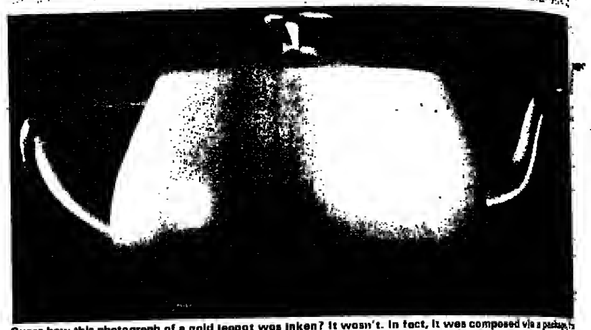
man's mind to put it together. The machine is only as good as the people behind it. There's one area I know where computers are still needed.

What's that?
It's in television ratings. There has to be a better way of figuring them out. They use a sample of 1,200 homes to tell us that the whole world is watching Fonzie. He's a nice young man, but if that's all the world has to watch, then we're in trouble. Also, they should break down the viewers by age and income. I can't see Cadillac aponsoring "Happy Days." What teenager can afford a Cadillac?
How do you equate this with Da Soto being your sponsor on television?
They were our sponsors for seven years. Then somebody in Detroit decided we were reaching the wrong audience. For what it's worth, our show was in the Top Ten all those years. De Soto thought it was a mass audience, and they weren't making a cheap car. So they dropped out and we got another sponsor. De Soto want broke four years later.
Do you think they'd still be in business if they'd stayed with you?
No. But it proves they didn't know their customers aa well aa they should have. Sponsors still don't know. They may have a top-rated show, and their sales go up. They don't conalder that it might be due to the fact they've made a euperior product. Or maybe tha economy is up and everybody's benefiting.
That's pretty serioua talk for a comedian.
My life isn't all fun and games. I read a lot. I think. It's wonderful what computers are doing in the field of medicine. I may not be here to see where it leads. But if it helps in early diagnosis and in monitoring, then sick people will suffer a lot less than they do now.
Than you respect tha technology.
I also respect tha people behind it. That knowledga they're looking for is out there just waiting for them. It's like Benjamin Franklin. Electricity has been around forevar but it took Franklin and his kite to tell us we'd discovered it.
But, Groucho...
That's all. And if you don't like it, you can leave in a huff. If that's too soon, you can leave in a minute and a huff.

Third international conference on Computing in the Humanities

From today, photography is dead

By John Lansdown



Guess how this photograph of a gold teapot was taken? It wasn't. In fact, it was composed via a package in the software house Information Internationl, which is said to be able to create realistic images in full colour could also have made the subject appear to be formed in, say, plastic or stone.

IN the first week of August, 130 enthusiasts gathered at the campus of the University of Waterlou, 70 miles outside Toronto, to discuss the use of computers in the study of such widely divergent subjects as Aristotle's ethics, billet, the Venerable Bede, English grommar and Latvian sun-songs.

The occasion was the Third International Conference on Computing in the Himanities which gave a rare opportunity for computer workers in the arts to get together and hear what their colleagues were up to.

Those attending divided into two basic groups: the majority, those using computera in the onalysis of art – mainly literary texts; and the minority, those using computers in the creation of art – mainly graphics.

Inevitobly, the way the confe-rence wns split into parallel sessinns tended to reinforce the division between the two groups and discouraged a great deol of interchange but even so there was much to be learned from workers of both camps.

More than most conferences, this one supported a large number of papers on highly specialised subjects. Some were so esoteric as to be breathtaking; however, even this specialisation leads on to the conclusion that there is no corner of learning in which computer techniques cannot be put to profitable use.

A few sample titles might suggest the scope of the work: Hardy's pastoral poetry; generating surrealist metaphors by random processes; gait analogue tracings and computerised analysis through a PDP-11/45; a language for regular operations in graphics; computer choreography snd video; on the teaching of Russian numerals by ualng an online computer; neotonality – new harmonies made possible by the computer; and the astonishing coding of the answers given by prisoners in various Templsr trials for purposes of a comparative study by computer of their testimony!

For reasons not made clear, a paper on the 'case of Patricia Campbell Hearst was withdrawn.

A particularly interesting presentation was given by Raymond Masters, of Pennsylvania State University on computer synthesis ol anamorphic projection systems. Anamorphic images are those which, when viewed normally, are extremely distorted, often to the point of being completely unrecognisable. The distortions only become meaningful when the image is viewed either from some predetermined position or when reflected in a special mirror.

The use of anamorphic images goes back into history, and their use in order to create special effects was much favoured by artists of attention during the Renaissance by architects and artists who wished to decorate dumeil and curved building surfuces with paintings which were to appear flat.

Masters has written a computer program to produce a wide variety of onmorphic images, including one which can be recognised only when the drawing is made up into a cone and viewed directly ulning its centre line (Figure 1). Muke up the cone and see for yourself.

Exhibitions of computer graphics were on display in a number of huildings around the campus and, while the wnrks were not representative nf all the best that is going on in the world (or even in Canada), it was encouraging to see new nnmes entering the field with striking results.

European artists were represented by wurks of Manfred Mohr, Tony Longson, Herbert Franke, Vern Molnar, Peter Struycken and Alan Sutcliffe.

Computer music and film presentations were continuously given, and book and hardware displays were on view, confirming the continuing trend of ever cheaper und more versatile equipment.

One of the highlights of the conference was a talk by John Whitney Jnr, who described the work of himself and his colleagues in Information Internationnl on the computer production of highly realistic images in full colour (see illustration above).

At the moment the technique involved is a little more expensive than any comparable hand-produced process, but this situation will change as time progresses, particularly for scenes which are complex and difficult tu visunlise.

As if to reinforce the high cost aspect of his business, Whitney had a full-size 35mm movie sound projector flown in from Los Angeles in order to present examples of his work.

He felt that the main market for the lmagery was in cinema and television, and showed his TV station identifyhg logos which were indistinguishable from the photographed versions in use at the nunment.

A feature of his program is that the materinl of which an object appears to be made can be changed with ease so that, for exampic, the teapot shown can be seen to be made of plastic, or guld or ovon stone with nn difficulty whutsuever.

The painter Turner, on seeing photngraphy for the first time said, "From today, painting is dead." Whitney's program makes nne almost want to say "From today, photography is dead."

A feature nf the conference wos that 20 selected papers were computer-typeset by the Waterloo University Press und given to delegates in a 365-page book soon to be distributed in detail by University of Edinburgh Press, price about £10.

This is an impressive document, quite unlike the usual conference proceedings brought from draft to publication in under two months. the editors, John Nnnt and Serge Lusignan, are to be congratulsted that they were able to put together such a complicated work with many diagroms, examples and photographs in such a short time. It is unlikely that this could have been done without the aid of computer.

Papers not selected for publication were separately reproduced from nuthor's typescripts and delegates could take copies of any that interested them.

This seemed a very satisfactory idea for delegates, who may not then burdened with papers they did not need – in contrast to the IFIP Congress, where proceedings weighed a hundredweight but those who submitted papers not chosen for publication often have felt aggrieved that their efforts were not treated more elegantly as those of favoured few.

A far more serious criticism, however, is that too many of the papers presented are reports which had been completed and work-in-progress, or, in many cases, work which was only started when time or resources became available.

An almost universal complaint of the US workers was that research grants for the completion of work the conference dealt with were extremely difficult to come by, and that in many cases delays of nearly a year in obtaining grants for one- or two-year contracts were commonplace.

Discussion with a number of delegntes suggested that the grant-funding agencies in Canada was now a reaction to the over-generous funding programmes of the past and that workers in all fields were now facing a fairly difficult time, and apparently far worse than their colleagues.

Perhaps we are beginning to see something right after all.

● Taking an off-beet look at computer grephics is architect John Lansdown who attended the third internationel conference on Computing in the Humanities.

The conference wae roughly divided into two groupe — the analysis of ert and the creation of art.

One highlight waa the computer-typesetting of 20 selected pepers by the Waterloo Univeraity Preee which were then dietributed to delegetee in the form of a 365-pege book.

An increasing problem for delegates waa thet US grant-funding egencies were reacting to over-generoue budgete in the paat with the reault thet aome were now feeling the pinch.

Figure 1

History updated: the Renaissance architectural preoccupation with anamorphic images. These are images which, when viewed normally, appear as curved surfaces, appear as flat. When viewed from a particular position, they are unrecognisable.

For Figure 1 to make sense, it needs to be seen as if looking directly along its centre line. Raymond Masters, of Pennsylvania State University, has written a program to produce anamorphic images.

NEWS IN BRIEF

Memories for DEC minis

ADD-IN memories for Digital Equipment PDP-11 series mini-computers, including the LSI-11, are now available from three UK suppliers—Fabri-Tek of Maidenhead, Intel at Oxford and London based Rapid Recall.

Fsbri-Tek and Rapid Recoll are both offering single board odd-in memories for the LSI-11 and PDP-11/03. These are the Fnbri-Tek LS-IN-11 and the IN-1611 which is built by Intel but supplied from stock by Rapid Recall. Both can provide 8, 16, 24 or 32K words on a single board and have eight times the packing density of the equivalent DEC memory.

The IN-5034, built and supplied by Intel, is designed to plug intu any PDP-11/03 or 11/34 mini and comes on a single board with 32, 48 or 64K 16-bit words.

RIGHTS in the UK Post Office's Viewdata software and expertise are to be bought by the West German PTT, after three months of trials with n GEC 4080 minicomputer. Viewdota links the television set via the telephone system to a remote computer, to provide access to a theoretically unlimited amount of data (CW, September 1).

A DEALING and administration system for NatWest Unit Trust Manager is to use a Ventek Datapoint 2200 minicomputer for the initial processing, the output from the mini being processed by NatWest bureau subsidiary Centre-file. It was also responsible for the design and implementation of the system, which took less thnn 12 months from specification stage to implementation.

A STOCK control system has been implemented by Mackay Spare Parts, of Mackay, Australia. The system was designed by Hartley Computer Associates, of Brisbane, and is centred on a Data General Nova 830 equipped with 15 terminals. Major advantage claimed for the system is that it provides a profit figure at the end of each day's trading compared with a delny of up to 50 days under the manual system.

FURNITURE Industry supplier Unerman, Greenham and Berger has replaced its Singer 10 machine with a 192K Prime 300 system. The order is worth over £90,000.

A FOUR page illustrated brochure entitled "Redactron's Full Range of Word Processing Systems" is now available from the Burroughs subsidiary Redactron Corp at 100 Parkway Drive South, Hauppauge, New York, 11787, USA.

THE Norwegion software house Computas has signed an agreement to market its super element structural onalysis program module, SESAM 69C, in the UK via the Applied Engineering Division nf Scicon Computer Services. Scicon will offer the service in both online and remote batch processing format.

IN the past six months the Northampton-based MBM Computers, a subsidiory of the Midland Business Machines Group, has supplied MBM 7000 computer systems worth over £400,000 to the systems house Marcol Business Mochines. The MBM 7000 is based on a PDP-11 central processor.

POST Office approval has been given to the AP770 uninterruptable power supply unit for use with the IBM 3750 PABX telephone exchange. It is made by Emmerson Electric Industrial Controls, based in Swindon, Wilts.

LETTERS

The editing system for non-experts

I was very interested to read Tom Gilb's column (CW, August 25). In 1972 we at the National Physical Laboratory storted work on an interactive editing system which is designed for occasional users as well as for regular "experts." This system is now available via the NPL Data Communications Network and is called EDIT.

One of the initial design aims was to provide help for a user replying to questions asked by EDIT, and to that end we have implemented a system very similar to thnt advocated by Gilb which has been in general use since 1973. Four universal conventions have been used:

1) whenever EDIT is expecting the user to type, it outputs a query "?", usuolly preceded by some question;
2) commands may be abbreviated so long as they are unique in context. This is useful for regular users;
3) if the user does not know what to do next he types a query, and all the possible replies to the question are displayed, with a one line explanation of each. These possible replies fit on to a single VDU screen; and
4) finally, if he does not understand one of the possible replies, he types a query followed by the reply and the system will output up to a screen-full of information on that reply.

Thus even new users can find their way round the system. As is also suggested by Gilb, the manual for this system is small by comparison with the facilities available.

Also, as systems Inevitably change and user documents change far more slowly, it is easier for users to find out about new or modified facilities.

A psper describing this system is to appear in Software — Practice and Experience.

A. L. HILLMAN
NPL
Teddington,
Middlesex.

The real difference is £3.80

IN his place from IFIP in Toronto (Downtlms, August 11) Chad failed to mention the real difference between Dijkstra and Jackson. It is £3.80.

Structured Programming, by Dahl, Dijkstra and Hoare costs £5.00; and Principles of Program Design, by Jackson costs £8.80. We are proud to publish them both.

CHARLES FRANKLYN
Academic Press Inc (London),
Oval Road,
London, NW1

We were first!

IN your report Com-Share maintains that their program development system, allowing the setting of breakpoints in the source text and the stepping through of one source statement at a time, is the first of its kind for a block-structured language (Software FIle, July 21).

At GEC Telecommunications we have been using such a system since 1976, also based on Coral, for developing programs for the Mark II BL, the processor selected by the PO for System X.

In our system the run-time testing can be performed on code produced by the production compiler, whereas with the Com-Share system it is necessary to use a non-optimising compiler, the generated code thereby having different real time characteristics from thot of the production compiler. We think it important to test the final product as such.

JOHN NISSEN
Telephone Switching Group
GEC Telecommunications Ltd,
Coventry.

No 'disagreement'

I DO not see any fundamental disagreement (Downtime, August 18) between Professor Dijkstra, "appalled by the standard of programming in hobbyist magazines" and Paul Baron, "hobbyist software better than commercial".

DR A. N. WALKER
Department of Mathematics,
University of Nottingham.

Look again at BSI decision tables draft

MY company markets CSAX, the decision table pre-processor, and I feel that our experience in this field is significant when considering the pros and cons of the BSI Standard, Recommendations for Decision Tables Uaed in Data Processing.

We align ourselves with those who have strongly criticised the standard and are in full agreement with the points raised by Mr P. M. Bell in his article in Software File (CW, August 11). My company has had a close association with Mr Bell in the past and we have a high regard for his knowledge of decision table techniques.

Further to the very relevant points raised in the above mentioned article we would like to add one other; the recommendations in the draft standard for initialiaing tables.

This states that an initialisation section should be placed between the table heading and first condition row. It seems to us that this goes against the accepted method of basic table design; that conditions and actions are kept separate; and can only lead to confusion.

If you consider that one of the main purposes of an initialisation section is to put a value into a field before the processing loop begins, and that a not uncommon method of doing this is by using the statement:

COUNT = ZERO

then it is claar that there is no way of identifying this as a condition or an action.

Obviously it makes more sense for all action atatements to be kept together. Therefore, it would be far better if an Initial Rule were used; being, if required, the first rule of a table and identified quite logically by not having any condition entries; ie the entries are blank and not dashes. This method is widely used at prasent with great success.

I am sorry if this criticism comes too late for the BSI to take any action on it, but to my knowledge hever at any stage of production of this Standard were the views of my company sought in this matter.

F. R. WILLIAMS
Cheshire Software Ltd,
Liverpool.

COGARVIEW

Let's slow down this headlong rush into EFTS

LIKE a lot of people inside and outside the computer industry, I am worried by EFTS. It's not that chequelessness itself troubles me — indeed, I am happy to accept that technologically speaking electronic fund transfers are an elegant solution to the increasing problems of keeping up with consumer transactions.

What worries me is something that hardly any of the protagonists astride the great EFTS controversy have touched on — confidence. The entire free world financial syatem is like a gigantic skyscraper erected on ambiguous foundations. Mostly they seem to be solid rock, but sometimes, as for instance in the recent case of the Swiss Credit Bank scandal, they turn out to be very shifting sands indeed. It takes only a small injection of doubt to undermine the public's confidence in the basis of the currency — we live perpetually a few steps away from panic.

The fact is that money is far more than just a convenient means by which bankers communicate with each other — frustrating though that fact is for the bankers. It is a talisman, a symbol for national and international stability.

Bankers themselves may not always fully realise quite how close to our hearts and minds the stuff they handle every day is. The Swiss Bank catastrophe makes a good case in point. When it became clear that the Swiss Credit Bank stood to lose up to $450 million from the finagling of one of its branch managers — a sum easily covered by the bank's reserves of $690 million — other Swiss banks rallied round to put up a loan of $1.2 billion as a gesture of confidence. To their bewilderment the public took it as just the reverse, an indication that things were far worse than had been revealed. As a result the stock market suffered its worst loss since the oil embargo of 1973, and the Swiss franc took a beating.

Cases that bear a varying degree of similarity, although they probably generated less exaggerated international ripples, abound. The collapse of Meili Bank International in Beirut, the Middle East's financial capital, around the turn of the decade, that is, well before the Lebanon's internal troubles became apparent, caused a headlong flight of oil money from Beirut, and played havoc with Arab currencies.

Politicians have always had the utmost reservations about tinkering in any radical way with the world's money. It is said that during World War II, both sides drew up full scale plans to puncture the economies of the other side by injecting vast quantities of counterfeit money. That such money had been printed is a fact, but the device was never used: both sides apparently hesitated at the brink because of fears that such action might rebound, dragging down the entire financial structure of the capitalist world.

If money was really just an efficient way of financial communication, then the logic that EFTS now have going for them would be irresistible. They cut the banks' expenditure on labour intensive cheque processing services; speed up supermarket queues; eliminate time consuming trips by customers to their bank branches and the need for bank staff to attend to them; could make overdrafts both easier and cheaper, and provide the full range of banking services at times when banks are shut. They even — for heaven's sake — save trees.

They do not, mind you, do all these things just as easily as the list suggests. The banks have made great strides in reducing the cost of cheque processing, so that the Chase Manhattan reckons it costs five cents to process a cheque today — about the same for several years despite inflation. That compares with a minimum 40 cents for an electronic deposit or withdrawal.

Where's the saving then? Well, apologists for EFTS say that to make the comparison direct, you have to add an extra $1.08 to the cheque processing costs to account for the time taken by a working person to get to the bank, queue there, and get back to work. This is a charge, they say, debited to society for the relative inefficiency, vis-a-vis EFTS, of current bank practices.

This argument may convince an accountant but it does not convince a cynical old industrialist like me. The argument assumes that instead of taking time off work to go to his bank branch, the worker in question transacts via EFTS in his own time. But this is highly dubious. He might just as easily take time off work, walk to his nearest EFTS terminal and cash his cheque there.

The fact is that the banks, glimpsing a long term possibility of replacing labour intensive cheque processing with capital intensive and hence cheaper EFTS, want us all to get sold on electronic banking because they need volume to make it a viable prospect at all. The US magazine Fortune calculates that the banks need around 15% of their customers to switch over to EFTS before they can start paying off cheque processing staff and selling off cheque processing equipment.

Up to that point they are simply stuck with the costs of amortising two rival methods of clearing transactions — and the shareholders won't stand that for long. It might also be fair to point out that even this calculation depends on the assumption that someone will want to buy second hand cheque processing equipment in an EFTS-oriented environment.

In order to stimulate this public appetite for EFTS, the banks have, at least in the US, started offering a sort of half-service in the form of credit authorisation services in retail stores. The theory is that once customers have got used to the advantages of having their chequas or credit cards cleared by computer, as they enter the supermarket or store, they will want to know why they can't use the manifest capabilities of the EFTS terminals to accomplish other banking chores like deposits, requesting overdrafts and so on.

I rather doubt the logic of this approach. It runs the risk that customers start to regard credit authorisation terminals as an adjunct of shopping rather than as an adjunct of banking. Furthermore, I believe that the public has a fixated suspicion of the computer which no amount of public relations work by the banks will be able to overcome. The hope that consumer pressure will rally to the banks' demand that the Congress legislate a distinction between a full-service EFTS terminal and a bank branch (at present the latter says they are the same thing and subject to the same control — which automatically makes the full-service terminal uneconomic) is a very pious one.

I feel that the present environment, where EFTS are regarded simply as a way of making banks work more efficiently, is akin to the UK, United Product Code, situation on the retail side for foodstuffs and is potentially as dangerous as the banks' traditional attitude towards money itself. "There is really little point in trying to stove off the advent of EFTS by enumerating the pitfalls of establishing it, for the simple fact is that it will come," said the president of the Eastern States Bankcard Association in the US blandly in a recent article — as though that ended its controversy.

Of course EFTS will come — but in what form? At the moment there are any number of prototype systems being hawked around by the get-rich-quick merchants, as though they were pocket calculators. In the scramble to get hardware on the market, sober consideration of such elementary subjects as standards, backup systems, privacy, security seem to have been thrown out of the window. There isn't even a standard for the manufacture of plastic bank cards.

There seems to me to be an inescapable paradox between the fact that several US banks are now offering full-service EFTS and losing their shirt in the process, and the fact that US retailers still haven't decided whether receipts from electronic retail terminals should specify "mink coat," "ladies wear" or simply "merchandise" on the description of purchase. Details as fundamental as this should be a pre-requisite of any move towards a nationwide EFTS network.

For less technologically precious than the average consumer, I will nonetheless want to know what happens when there's a systems breakdown before I trust my transactions to EFTS.

Beyond that, I will want to know what safeguards are there built into the system against malicious damage. We are nowhere near being able to guarantee the physical security of even a single computer installation yet. How can we guarantee the security of a network of computers to which we will have entrusted the whole financial structure of a nation, and by implication that of the western world?

Pace the Eastern States Bankcard Association's plan of trying to delay the introduction of EFTS unresponsibly, I am however arguing that they are far too important — part of the future to be left to the whims or to the computer whizz-kids. Public confidence in the security and security of the system against forces malign or circumstantial is the most important element. We must remember that it doesn't take only a disaster on the scale of the card-house crash to arouse suspicion that something is wrong about to account. We cannot afford to trust EFTS until public suspicion can be dispelled.

Prediction that fell a little short of its target

IN 1974, Bill Read, managing director of Univac's UK operations made a bold prediction that within three years Univac would be the undisputed No 3 in the UK market, behind IBM and ICL. TIM PALMER talks to Read three years on and finds out how he considers Univac has fared . . .

BACK in 1974, Bill Read, managing director of Univac's UK operations, made a bold prediction that within three years, Univac would be undisputed number three behind IBM and ICL in the UK market. "And by undisputed, I mean a lead of at least 2.5 percentage points over also-rans on any parameter you care to name, be it value of installed base, number of installations or value of new business" (CW, April 3, 1974).

This latest figures from IDC Europe for installed base by value up to the end of 1976 show that Univac fell a little short of its ambitious target; the market researchers give IBM a fast-growing 47.2 per cent, ICL a declining 26.5 per cent, with Honeywell still in third place at 8.5 per cent, and Univac and Burroughs level-pegging within the margins of error of the survey, Burroughs with 6.1 per cent and Univac 6 per cent.

"We have always looked at this from the point of view of mainframes costing £100,000 and upwards," explains Read. "On that basis IBM and ICL are clearly one and two, and we believe we are number three. It isn't possible for us to get to number three if you include equipment we don't sell. And if you talk in terms of large scale computers costing over £500,000, we are clearly ahead of Honeywell and Burroughs on business done over the past 12 months."

"Then again; Honeywell does a fair bit of exporting; if you take out the work they do for overseas customers, their gross domestic turnover is similar to ours, but where our business tends to be concentrated at the top end of the market, they tend to be more successful at the lower end."

Although Read says that he had not visualised Univac as ever being an "all-products" company, it will in fact very soon have a portfolio of products comparable with that of its competitors.

The two developments which have brought this about are the acquisition of Varian Data Machines, which gives Univac a general-purpose mini line to match Honeywell's Level 6, and the soon-to-be-introduced BC7 office computer, which will challenge Burroughs' B60 and B800.

The BC7 was launched in the US at the beginning of the year, and the timing of its European introduction depends on the rate at which the standard application software packages can be Europeanised.

This work is under way for the whole of Europe at Brentfields, London, and once it is satisfactorily completed, a specialised sales force will be recruited by the presently dormant Univac Office Equipment Division to market the Intel 8080-based business computer.

The Univac V77 line of minicomputers, which consists of the V77-200 basic OEM model, the medium-scale V77-400, and the powerful V77-800 megamini, come under a new division, Univac Mini-Computer Operations.

For the medium term, Mini-Computer Operations will remain st arms length from the mainframe computer business, except insofar as packages including 1100 or 90 series mainframes and V77 minis can be proposed to a particular customer. And Read does not anticipate that Univac will run into the kind of rivalry that exists between the IBM DP division, which sells System 370, and the General Systems Division which sells System 3, the new Series 30, and the Series 1 mini.

"The rivalry between GSD salesmen pushing the 3/15 and DP salesmen selling the 370/115 and 125 has actually caused customers to switch to our 90/30 to get out of the firing line," says Read.

With orders for the big new 1100/80 from the Altrincham Group of Trustee Savings Banks, to replace ICL System 4s, and from Abbey National Building Society, currently an 1106 user, Univac is on the crest of a wave in the UK.

"Our financial year to the end of March was a record in the UK with orders 25 per cent better than in any previous year. The 90/30 again did well, and the 90/60 is beginning to take off, particularly as a replacement for the old 9400."

Apart from the highly visible 90/30, the rest of the 90 series, the 60, 70 and 80, which run the VS/9 operating system, is something of an enigma, and for new business lies very much in the shadow of the 1100s, particularly the 1100/10.

"The 90 series forms a pyramid, with 80 per cent of the business above the 90/30 coming from our own base," comments Read.

"We haven't sold any 90/80s in the UK yet, and where we are approaching a potential new customer, we traditionally bid an 1100 unless there are overwhelming reasons, such as an IBM user wanting to get away from IBM, to bid the 90 series."

A face lift is on the way for the 90 series, and it will include a more powerful version of the 90/30 which will plug the gap between that machine and the 90/60, and may also be able to run both the OS/3 and VS/9 operating systems.

"I can't tell you anything about the new machine beyond the fact that it will be designed to compete with what we imagine IBM's unannounced 370/128 will be," says Read firmly.

The TSB and building society orders — Univac has the Nationwide with an 1100 as well as the Abbey National — have won the company a firm and somewhat uncharacteristic base in the UK financial sector. In the US, it has virtually no banking customers, but orders in Iran and Spain are beginning to make the 1100 a force to be reckoned with in banking, and Univac is evaluating the options open to it in putting together a package which includes banking terminals. One option is clearly a formal co-operative arrangement with its Swedish partner, Datasaab.

Bill Read, managing director of Univac's UK operations.

The thoughts of Bill Read

ON the government's mildly revised procurement policy:

It looks as if the government has decided to tighten up on the implementation of the policy, to try to ensure that price-performance is adequate. But how can it ensure that the costs and the performance of the ICL systems it buys are appropriate without going out to open tender?

On setting up manufacture in the UK:

I recognise that under the US government's policy of buying only computers made in the US we wouldn't get a look-in here if the UK government applied the same rules. But already the only government business open to us is upgrades of existing systems like the Treasury machine, the National Engineering Laboratory, the Institute of Hydrology and the systems with the Navy and the Air Force.

If the government changed its policy and made it a requirement that a company manufactured in the UK in order to get government contracts, we might have to reconsider our policy of concentrating European manufacture in West Germany.

But remember that the Sperry Rand group in the UK is the largest outside the US: it is a £100 million company and the New Holland, Gyroscope and Vickers divisions are major UK manufacturers and exporters. We feel that this should be taken into account in the government's attitude to the Univac division."

On the new aggressively priced IBM 3033:

It doesn't have any effect on us in the UK, because at that level of system, customers just don't change suppliers. I believe that IBM was forced to introduce it as a stop-gap measure because Amdahl had taken 10 per cent of its business at that level.

On the differences between US and UK attitudes to buying computers:

The US companies are much more cost-conscious in all areas, and price is very important. But in the UK, the tax system tends to iron out the differences in cost of rival systems.

In addition, the UK manager tends to take the attitude that if it's the company's money he is spending, cost is not of prime importance. The main exception to this is private businesses, where the manager feels that he is spending his own money and not the shareholders' when he buys a computer.

On ICL:

There are 140 countries in the United Nations, but only the US, Japan, Germany and the UK have completely independent mainframe manufacturers, so ICL's existence can hardly be justified on arguments of national security.

There's a lot to be said for keeping it alive for the sake of national prestige, and it is certainly out of the lame duck category.

But can ICL survive long-term? Most informed people believe that it cannot unless it gets further government money to develop the next new range which all the manufacturers will have to come up with to survive against IBM's Future Series, whatever that turns out to be. In addition, it needs stronger overseas markets, and that implies further acquisitions, but are there suitable companies to be bought? The other alternative is to go into partnership with another manufacturer.

IDC figures indicate that ICL is losing ground to IBM in the UK. Because of the single tender policy, that means that ICL is losing out in the private sector. If ICL cannot hold its own in the private sector of its home market, how can it hope to compete overseas where the public sector market is closed to it?

Company that sells tools rather than applications

ONE man at DEC's corporate headquarters in Maynard, Massachusetts has his finger on the pulse of every aspect of the company's business. That man is Al Mullin, whose function is to keep the people and institutions who have invested their money in DEC, informed about what is happening to the company. TIM PALMER made a flying visit out from Boston in the DEC-copter, the company's private helicopter, to get the first hand story on where DEC is going and how it plans to solve the problems of success.

BY the simple expedient of designing a quality product capable of being manufactured in large quantities, and selling it to customers able to put it to use from their own resources, Digital Equipment Corp of Maynard, Massachusetts, has won for itself a market position where even the problems of success seem painlessly soluble.

Dominating the minicomputer business almost as totally as IBM dominates the mainframe market (DEC is estimated to have about 50 per cent of the Western mini market) the company has remained enviably free from the animosity that surrounds IBM, free even from the jealousy that usually attends success. It is also now No 2 on the whole computer market.

"We don't try to run the customer's business," says Al Mullin, DEC's manager for investor relations, by way of explanation. "Our customers are sophisticated users, and we sell them tools rather than applications."

Since that is precisely what IBM is doing for the first time with the Series 1 mini line, DEC should be in for some stiff competition from an organisation for which marketing is a way of life.

"Series 1 appears to be the result of strong pressure brought to bear by IBM's own customers. It looks like a good product, but without any outstanding technical advantages; similar in structure to our PDP-11/04 and 11/34," says Mullin.

"There's no indication yet that Series 1 has affected our sales, but it is a developing situation and too early to say.

"A few months ago we were quoting delays of a year, but we've added extra manufacturing capacity and it's now down to six to 10 months. Over the next three or four months we hope to get it down to 90 days to six months."

With DEC manufacturing PDP-11 series machines at over 1,000 a month the problems presented by a down-turn in demand look horrendous.

"The rate of growth of orders is declining," says Mullin, "but we expect 1978 to be a very good year as well, with the big 11/70 and the new 11/60 doing particularly well. We are forecasting a slowing of economic growth in 1979."

DEC has had to ride two major recessions in its history, those of 1971 and 1975.

"Of course we were affected by them, but we were able to get through them without major layoffs, simply by stopping recruitment. People are our most valuable asset and we hate laying them off," says Mullin.

A major problem which DEC faces is that of recruiting sufficient service engineers.

"The armed services used to be a prime source of trained personnel, but with the cut-backs in the forces over the past three or four years, that source of supply has largely dried up.

"We spend a great deal of money on in-house training, and offer continuous education through our 'in-house university' both with instructors and with self-training using cassettes. We also work with local technical schools and colleges, training people on our equipment, and when they come out they are potential candidates for our service force.

"We also look for suitable men and women from the factory floor suggesting that they may like to transfer to the maintenance force."

Microprocessors ought to represent another cloud on DEC's horizon, but the company does not see them that way.

"They will have a salutary effect on DEC, but we regard them as just another component. We see them being used in automobiles, washing machines and so forth, selling at a dollar or two a time. But we couldn't get into that business. We use micros in printers and other peripherals, but the microcomputer like our LSI-11 is a much more powerful tool. We don't expect to get into the microprocessor business although we have taken over manufacture of the chips for the LSI-11 following Western Digital's financial difficulties."

DEC sees a wide range of unexploited markets for the minicomputer, particularly in the commercial distributed processing market, where DECNET, the company's network architecture is a crucial offering. "We have about 100 customers using parts of DECNET right now," comments Mullin.

The company finds three market sectors currently particularly strong: the traditional OEM market which began with machine tool control and now embraces areas like medical instruments and home entertainment products; the laboratory market; and the commercial market, embracing business systems, text-processing systems and the whole range of commercial operations from manufacturing and sales to banking and insurance.

A "people" problem that DEC does not really feel itself equipped to address is the case where a systems house selling a product based on DEC hardware provides inadequate support to the end-user or otherwise performs unsatisfactorily.

"As far as we are concerned, the sale to the system house is the final sale. We do make a careful check of their expertise and financial stability and we try to associate with small companies having good track records, but we don't strike poor performers off our list of customers or anything like that."

With the compound growth rate of 40 per cent over the past 10 years, and an enormous product back-log it is surprising that nobody has tried to get a share of the action by designing a machine to run the PDP-11 RSX and RSTS operating systems.

"The reason is that we have very tight patents on the Unibus and Omnibus, and if anyone tries to infringe those patents, we come down on them very hard," says Mullin. "We didn't have any patent protection on the PDP-8, and that has been copied."

DEC is extremely jealous of its expertise.

"We believe our technology and expertise is not only of crucial value to us, but one of America's best exports, and we don't intend to share it with anybody."

So, no joint ventures in foreign countries for the foreseeable future, a policy which has confined DEC to a very small share of the Japanese market.

Also no acquisitions.

"Our growth has all been internally generated, and we don't have an acquisition program: it uses up too much management talent. We have neither the ability nor the resources to assimilate and manage other companies successfully. Also, we haven't seen anything which would be of value to DEC."

Manufacturing of both [illegible] and a full catalogue of peripherals apart from a few disc drives, tape units and printers, is concentrated primarily on the American mainland and Puerto Rico. In Europe there are plants in Galway, Eire and [illegible] Scotland, and another planned for Bavaria.

Last year the company had the unaccustomed experience of being made to feel decidedly unwelcome when it applied to set up a plant in France.

"The local people, the business and financial community all wanted us, but apparently the industry ministry thought that a small plant employing no more than 200 people posed a major threat to the emerging national minicomputer industry. They didn't give us a reason, they just turned us down."

DEC is noncommittal on plans to broaden its product range, and declines comment on reports that a 32-bit mini is in development.

"If someone wanted a big word-length right now, we would refer them to our DECsystem 10 and DECsystem 20 mainframes," says Mullin.

Mainframes, he says, are a small but very important part of DEC's business.

"Over the years they have represented between 10 per cent and 15 per cent of our business, and they are at that [illegible] and of that range right now [illegible] they are important as a part of our plan to provide time[illegible] systems from the very [illegible] to the largest.

"And although our mainframe business is not growing as fast as the minicomputer side, it is growing faster than the market for mainframes as a whole," adds Mullin.

Although a new dual-processor option was announced for the DECsystem 10 [illegible] year, Mullin indicates [illegible] smaller DECsystem [illegible] large computer group [illegible] of the future. "We [illegible] offering more performance [illegible] better operating software [illegible] 20," he says.

DEC has no plans to [illegible] into the large-scale [illegible] market [illegible] Amdahl [illegible] rather the company [illegible] measured evolution [illegible] markets like word processing [illegible] capitalising [illegible] software [illegible] been [illegible]

IBM price cuts keep us honest, says Univac's Jim Fullam

For a few months last year, stock analysts and industry observers began making gloomy comments about Univac's performance and long-term viability. But the rapid market acceptance for the new 1100/80 and growing business for the 90 series have quelled the uneasy murmurs, and Jim Fullam, Univac vice-president, Worldwide Communications (pictured left) is confident that the company is well placed to meet the challenge of IBM's radical price reductions.

THE new aggressive IBM pricing policy is the inevitable starting point for discussions with all other mainframe manufacturers, and while the effects on the market have yet to be seen, Univac is confident that the new prices will not seriously upset its business plan.

"We had record profits as well as revenues in our financial year to March 1977," says Jim Fullam, Univac vice-president, Worldwide Communications. "We are looking for a 10 to 15 per cent annual growth in profits over the next few years, and are investing heavily in research and development."

Univac, which had a worldwide turnover of $1,477 million in 1976, with just under 42 per cent coming from outside the US, claims that its investment in R&D, at over eight per cent of turnover, is one of the highest pro rata in the industry. The $125 million spent last year is planned to increase 13 to 15 per cent in the current year.

"The long term leases which we started a few years ago are now beginning to show residual value, so we are better placed to cut our margins," says Jim Fullam. "Technology is now giving us really big cost reduction and what IBM has done is good for the market. It keeps us honest; we would never have reduced our prices voluntarily!"

IBM's across-the-board price cutting policy could also put the company at odds with its shareholders. "In our case if we cut prices, it only affects hundreds of users; in IBM's case, it affects thousands."

"IBM is behaving as if the Justice Department didn't exist: it's annoyed at the plug-compatible suppliers but I don't think it has done enough to stop other people coming into the plug-compatible CPU and add-on businesses."

Although the Univac 90 series, particularly the 90/60, 70 and 80, is targeted to appeal directly to 370 users, Univac is not looking for all-out war with IBM over the 370 base.

"There are three classes of users: those who love IBM, those who like IBM enough to use its software, but are equally happy with plug-compatible hardware, and those who hate IBM.

"Those who hate IBM could be only 10 per cent but they still provide us with plenty of business for the 90 series.

"Conversion is always a tough job, but even with that I believe the repricing on the 60, 70 and 80 makes them still a fairly attractive offering," says Fullam.

There is a concept abroad, promoted in particular by Amdahl, that it is an IBM software world, and that in 10 or 15 years' time everyone will be using IBM software, but not necessarily on IBM mainframes.

"I think the Japanese will try to universalise IBM software," comments Fullam. "But I believe that between now and 1985 only a very small percentage of the market will go to the plug-compatible CPU companies. There is room for them in the market, but we are not seriously considering getting into it: With our own software, we do not have to be nearly so sensitive to IBM as Amdahl does."

Nevertheless, the trend is for all manufacturers to reduce the diversity of their mainframe lines, and Univac has a major conversion task under way with its 490 series base, now almost exclusively 494s.

The 1100/80 was announced late last year and includes a 490-mode hardware emulator. Customers like Lufthansa, the German airline, are now planning to make the switch to the 1100/80.

"There's no point in kidding: conversions are always tough, and many customers will probably continue to run some of their mature applications inefficiently in 490 mode because it's cheaper than converting.

"We don't have any figures on how much cheaper it is for a 494 user to switch to the 1100/80 rather than, say a 370. But timing is the initial factor. If they moved to a 370, they would have to move all their systems across before they could get rid of the 494. No one ever brings in a special staff for carrying out a conversion; it has to be fitted in with everything else. The 494 has been a very reliable machine, so we have a good relationship with our users."

All 494 users have fairly large installations, so Univac sees no need for 490 mode emulation on any machine other than the 1100/80.

There is no clear growth path for the 418 line, and each customer is being assisted on an individual basis. One, CRC in the UK, is moving to an 1100/11 (CW, March 3).

"We do have some conversion aids, and users can put their 418s on as front-end processors, because both the 494 and the 418 are good communications handlers," says Jim Fullam.

The vast majority of 418s are purchased, which means that the main revenue now accruing to Univac is for maintenance.

Since it acquired the RCA Spectra 70 base in 1971, Univac claims to have retained the loyalty of almost 80 per cent of RCA users. Some have converted to the 90 series, but many are still running their RCA machines.

The agreement with Varian for acquisition of its Varian Data Machines minicomputer division is now complete, and Univac believes it can make money out of the acquisition.

"Minicomputers are a 30 per cent a year growth market and we wanted to be in it," says Jim Fullam. "It gives us a full product offering, and it also takes us into the fashionable distributed processing market, although I'm not sure how important that is really going to be."

There has not yet been time to study the Varian software thoroughly to find out how well it fits with Univac's own, "but there are bound to be incompatibilities; there always are."

Varian had been making a bid for a share of the US banking market, but without much success, and it remains to be seen whether the acquisition will help Univac make the breakthrough into US banking, up to now a barren area for the company.

There is the intriguing possibility that some kind of co-operative agreement will be worked out with Datasaab, whose US subsidiary significantly remains a part of Saab-Scania under the Swedish Government's plan to form Datasaab into an independant company owned 50-50 by Saab and the State.

Saab also owns almost 50 per cent of Saab-Univac in Scandinavia, and 51 per cent of the Swedish Saab-Univac company. Univac declines to comment on the possibility of US co-operation.

Many companies are talking to Univac right now, and Univac is willing to consider any promising propositions.

"We have three complementary growth plans; by joint ventures such as Saab-Univac, and with Oki in Japan; by acquisitions, and from our own internal strength."

The Japanese government's policy of helping the national industry has, Fullam acknowledges, cut Univac's market share there, but the company still has about six per cent of the Japanese market and has announced several major new orders. Although called the 90/600, 700 and 800, the 90 series machines built in Japan are identical to the US ones, and some have been exported to South-East Asia.

The Saab-Univac venture has been an enormous success, with bookings up to 300 per cent in the first full year of operation.

There is a new Univac Middle-East subsidiary, and the company looks for expanding business there.

"The real growth can only come from new applications, particularly for large-scale computers. Most observers believe that only a small proportion of the possible applications are currently being implemented," observes Jim Fullam.

"The advent of data communications gave Univac a quantum leap forward, and to survive and grow we have to find completely new application areas. New applications are make or break in this business."

—Tim Palmer

Appointments

LONDON
Derek Blakemore
01-261 8454

MANCHESTER
Owen Kelly
061-872 4211

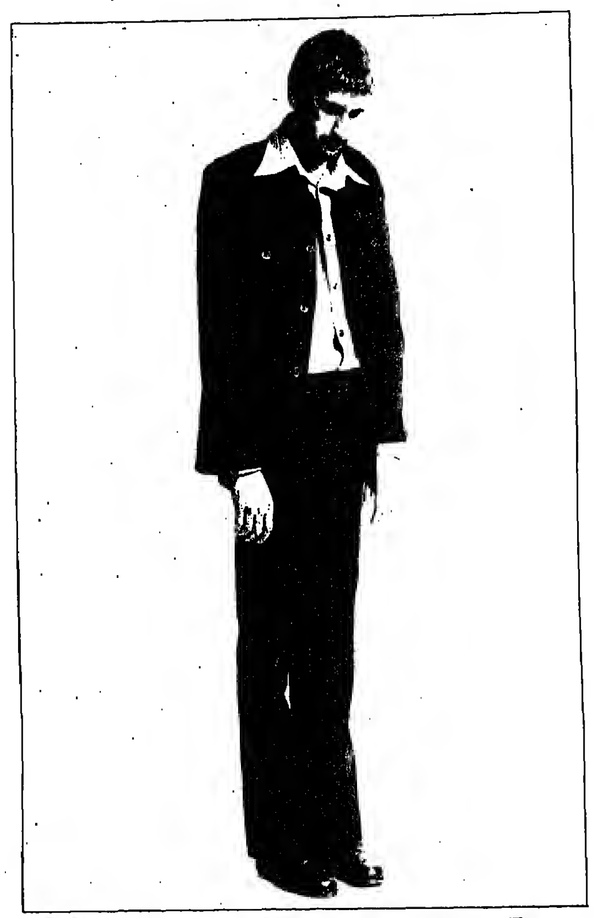
BIRMINGHAM
Alan Escott
021-356 4838

GLASGOW
Owen Kelly
061-872 4211

BRISTOL
Alan Escott
021-356 4838

LONDON
Steven Bassingthwaite
01-261 8174

MICHAEL WHITE
Classified Advertisement Manager
01-261 8028/8688



Data General refreshes the parts other careers cannot reach.

On the left: How I used to feel after eight years in large organizations as an analyst. Lifeless. Career prospects not good.

On the right: After joining Data General. A fully experienced lecturer. Off to Australia to help set up a training facility 'down under'.

How did this miracle happen and could it happen to you? Yes it could!

All you have to do is ask

Just convince them you'd like to be a lecturer – if you've had experience, fine. If not, don't worry. Personally, it got me away from 'batch' and into the 'real time'. I went to Data General's Boston HQ in the States for training. Came back with all the knowledge I needed to work on commercial, scientific and industrial applications.

I worked briefly as a support analyst. Then in Sales. I felt decidedly refreshed.

My big chance

They were setting up training facilities and needed lecturers. The idea really appealed to me. I applied. Was accepted. They did everything they could to help. *They* taught me to teach. Since then I've been training customers' staff here in London and all over Europe. Now they've asked me to help set up a training facility in Australia.

Your big chance

My job's available here in London along with three other vacancies (male or female) in the Training Department.

We need two Lecturers for Field Service Training and two lecturers for Customer Training – all based at our Harrow Training Centre. At the moment you can be a Field Service Engineer, a Programmer or in sales. Don't worry, we'll teach you all you need to know and the salary's good. Compare your last four years with mine. Tempting isn't it? Just phone Keith Lamdin on 01-864 9611 (reversing charges if necessary). He'll give you all the facts. Then it's up to you.

This really happened. It can happen to you. Derek Hall

Data General

Data General Limited, Westway House, 320 Ruislip Road East, Greenford, Middlesex. UB6 9BH

Training & Career Development Manager

A unique opportunity for a Computing Professional c.£6,500 Potters Bar, Herts.

The continued growth of IDEC, a specialist division within ITT Business Systems Europe, has created the need to recruit a No. 2 to the Personnel Manager in Potters Bar.

Your main responsibility will be to plan and manage the company's training and career development activities—analysing training needs for all staff, maintaining a management succession and career development plan and evaluating internal and external training courses. You will also liaise closely with the Personnel Manager in other areas including recruitment and manpower planning.

Ideally qualified to degree standard in a science subject, your experience should have included at least 5 years in the computing industry or a closely related field. Previous involvement in a training function would be desirable but is by no means essential.

This is a responsible appointment offering first class prospects of career progression for the successful man or woman, and demanding the ability to work on your own initiative and to take decisions in the absence of the Personnel Manager.

An attractive salary is offered, negotiable up to £7,000 p.a. plus the full range of large company benefits including 24 days annual holiday, flexible working hours and pension scheme.

If you have the ability to contribute in this challenging environment, then telephone or write with brief details of your career to date to: Mr. J. Healey, Personnel Manager, IDEC, Canada Life House, High Street, Potters Bar, Herts. Telephone: Potters Bar 44137.

IDEC

BOROUGH TREASURER'S DEPARTMENT

Senior Systems Programmer

S.O.2. Up to £5,787 p.a. inc.

Reporting to the Assistant Computer Manager (Systems and Programming), you will be responsible for undertaking research into the application of computer hardware and software. You should be an experienced computer professional, with a background of programming in 1900 COBOL, GEORGE 2+ and with a proven knowledge of communication systems.

36 hour, 5 day week, with flexitime in operation.
Application form from Personnel Officer, Town Hall, Forest Road, Walthamstow, London E17 4JF (Tel: 01-531 8889 – 24 hour answering service).

Closing date: 23rd September 1977.
Please quote Ref: B.587.

London Borough of
Waltham Forest

SOFTWARE ENGINEER/PROGRAMMER

Is sought by International Company to design and write high level languages such as CORAL 66 with experience in the RSX/11 operating system. A HNC/Graduate with previous programming and writing experience and a good knowledge of computer control applications is required.

For more information, phone 01-499 9441. Listen, don't speak; or apply direct to

Personnel Department
APV COMPANY LIMITED
Manor Royal, Crawley, Sussex

H.P.S.L. H.P.S.L.

FREELANCE PROGRAMMERS IBM PL/1 OS

(IMS an advantage)
Urgently required for 6-9 months contract on the South coast
Tel. Amersham (02403) 22201

H.P.S.L. H.P.S.L.

SYSTEMS ANALYST

South West Lancashire around £6,000

Our clients are part of a leading group internationally known for their wide range of high quality consumer products, which are marketed both in the United Kingdom and overseas. They are expanding their D.P. activities to encompass the planning and control of their manufacturing operation at Skelmersdale, Lancashire, where they have an ICL 2903, and they now need at least one additional Systems Analyst to assist their recently promoted D.P. Manager. Applicants, male or female, and in their late 20s or early 30s, must have at least four years' D.P. experience in a manufacturing / Production Control environment, which will include installing a computerised system to support production planning scheduling and materials procurement; they will be self-motivating and used to working without close supervision. It is possible that, after 18-24 months in S.W. Lancashire, they may be promoted to a position in Group Headquarters in Central London Ref: 707/CW

Apply in confidence to Charles Moores,
Data Search
53 Victoria Street,
London SW1H 0EY.
Tel. 01-222 2022

Data Search
a member of the Search group

Culham Laboratory

Chief Computer Operator

to undertake responsibility for the operation and staffing of two ICL 4-70s (Multijob) linked to three Modular One Computers, two graph plotters and wider communications networks

The Laboratory is concerned with research into controlled nuclear fusion and plasma physics and the central computing system provides a wide variety of services to many users. They include batch and interactive facilities for scientific calculations and a link-up with several computers for storing and processing data on-line from the Laboratory's major experiments.

QUALIFICATION AND EXPERIENCE:
Minimum qualifications require a standard of 5 GCE passes of which two should be at 'A' level. At least one year's experience on a large multi access computer is essential.

SALARY:
In the range £2,300-£4,300 depending on age, experience and qualifications.

Please write or telephone for an application form and further details to:—
Mrs. G. E. Hayns, Personnel Department, Culham Laboratory, Abingdon, Oxon OX14 3DB, telephone Abingdon 21840 Extension 280.

Field Service Engineers

Staines-up to £4,500 + car

Data Recording is Europe's leading computer peripheral manufacturer. We're expanding rapidly and are currently looking for additional young, practical field service engineers (male or female).

You'll be visiting customers both in the UK and abroad and be responsible for warranty repairs, service contracts and for training customers' engineers. Ideally, you will have some previous experience of high-speed data communications, possess an ONC qualification and have a good track record.

In return, we'll pay an attractive starting salary together with all the fringe benefits associated with an expanding company.

For more information please telephone or write to: Ronald Brown, Personnel Manager, Data Recording Instrument Company Ltd., Hawthorne Road, Staines, Middx. Tel: Staines 51388.

DRI Data Recording Instrument Company Limited

MERCHANT BANKING SYSTEMS

SENIOR ANALYST AND DESIGNER **£6,500-£7,500 plus benefits**

We are planning to start the development of an on-line banking, investment and information system based on PDP11/70s this year. This presents an opportunity for a senior systems analyst and a senior systems designer to join a development project at its start. Applicants for both positions should have several years' data processing experience and have been involved in all stages of successful projects.

SENIOR SYSTEM ANALYST
should currently hold a senior position and be accustomed to operating at all levels within an organisation. A financial/commercial background is essential and banking experience would be an advantage.

SENIOR SYSTEMS DESIGNER
must have experience of PDP11 systems and of RSX11. The applicant should currently hold a supervisory position with responsibility for systems and applications programming.

Apply, with details of career to date, to: K. O. Willingale, SINGER & FRIEDLANDER LIMITED, 20 Cannon Street, London EC4M 6XE.

A Member of the Bowring Group